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Montana Rivers Information System

User's Manual

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Montana Rivers Information System
Rivers Report

User's Manual

Version 2.0
December 1989

Prepared for

Montana Department of Fish, Wildlife and Parks
1420 E. Sixth Avenue
Helena, Montana 59620

by

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Preface

The development of the Montana Rivers Information System (MRIS) is an interagency effort coordinated by the Montana Department of Fish, Wildlife and Parks (MDFWP). The MRIS is Montana's input to a Northwest data base project (with Washington, Oregon and Idaho) initiated in 1984 to identify and evaluate significant river related natural values. The project is funded by the Bonneville Power Administration (BPA).

The Natural Resource Information System at the Montana State Library manages the MRIS on behalf of the MDFWP.

Acknowledgments

The preparation of this MRIS User's Manual was a joint effort between the Montana State Library and the Montana Department of Fish, Wildlife, and Parks. Several staff at both agencies were involved in its production: At MDFWP, Janet Decker-Hess, MRIS Project Manager, and Gael Bissell, Wildlife Biologist. At the Montana State Library, Jim Stimson, Data Manager, Jim Senkler, Programmer/Analyst, and Pam Smith, Administrative Assistant.

These authors wish to thank all others who contributed time in final reviews and editing. The authors offer a special thanks to the staff of the Idaho Rivers Information System -- the IRIS User's Manual, in many ways, formed the basis for the development of the MRIS User's Manual.

Support Documents

In using the MRIS, you may find the following documents helpful in understanding more about the assessment process and the system:

Pacific Northwest Rivers Study, Assessment Guidelines: Montana, 1986
Pacific Northwest Rivers Study, Final Report: Montana, 1988

Disclaimer

The Montana Rivers Information System is not designed to be an exhaustive data base on Montana's rivers and their related resources. Please be advised that any data retrieval from the Montana Rivers Information System is not intended as a final statement on river related resources and should not be used as a substitute for on-site field surveys needed for resource evaluations.

TABLE OF CONTENTS

1 THE MONTANA RIVERS INFORMATION SYSTEM RIVERS REPORT . . 1
1.1 OVERVIEW 1
1.2 THINGS TO REMEMBER 1
1.2.1 Commonly Used Keys 1
1.2.2 On-line Help 2
1.2.3 If You Get an Error 2
1.2.4 Technical Support 2
1.3 USING THE SYSTEM 3
1.3.1 Starting the Rivers Report Software 3
1.3.2 Opening Screen 3
1.4 ELEMENTS OF A RETRIEVAL 4

2 EXAMPLES OF COMMON RETRIEVALS 6
2.1 Searching by River Name 6
2.2 Searching by River Name and County 11
2.3 Searching by Final Value Class 15
2.4 Searching by Fish, Wildlife and Parks Water Code 21
2.5 How to Design Your Own Query 24

3 GENERATING REPORTS 30
3.1 Overview 30
3.2 Brief value class summary report 32
3.3 Descriptive value class summary report 33
3.4 Resource summary report 34
3.5 Full report 37

APPENDICES
Installation . . . . . A - 1
Database Structures . . . . . B - 1
Codes . . . . . C - 1
Files . . . . . D - 1
Runtime Errors . . . . . E - 1
Report Definition File . . . . . F - 1
Customizing the Rivers Report . . . . . G - 1

1 THE MONTANA RIVERS INFORMATION SYSTEM RIVERS REPORT

1.1 OVERVIEW

The Montana Rivers Information System Rivers Report contains information on fisheries, wildlife, recreation sites, natural and cultural features for more than 3,500 stream reaches within Montana. This information can be retrieved and reported in a variety of ways. The Rivers Report is completely menu-driven, that is, you will be presented with a series of menus from which you will make selections. The menu selections allow you to retrieve information easily without having to know dBase III.

The purpose of this manual is to show you how to use the Montana Rivers Information System (MRIS) Rivers Report, and specifically, the menu system to retrieve data.

1.2 THINGS TO REMEMBER

1.2.1 Commonly Used Keys

Key conventions used with the MRIS Rivers Report are as follows:

<cr>	Enter or Return key.
<esc>	Escape key. *
F1	F1 function key. **
Arrow keys	Cursor control keys.
Home	Home key on the numeric keypad.
End	End key on the numeric keypad.
PgUp	Page up on the numeric keypad.
PgDown	Page down on the numeric keypad.
Backspace	Backspace or <-- key, usually found above the Enter key.

* the Exit key is frequently mentioned in many of the screens. It is currently assigned to the Escape key but you can assign it to any key that you wish. See Appendix G.

** the Help key is also mentioned in the screens. It is currently assigned to the F1 key, but you can assign it to any key that you wish. See Appendix G.

1.2.2 On-line Help

On-line help is available throughout the Rivers Report. To view the on-line help screen press the Help key. If **MORE** appears at the bottom left of the help screen use the arrow keys to scroll through the help.

1.2.3 If You Get an Error

The user software has been thoroughly tested for all of the commonly used retrievals. However, it is possible that some errors or bugs are still waiting to be discovered. If an error occurs during a retrieval, write down the message and refer to Appendix E for assistance. If the error is not listed in Appendix E, or, if the suggested remedy in Appendix E does not work, refer to section below for the phone numbers of support staff.

1.2.4 Technical Support

The Natural Resource Information System Staff provides answers for a variety of general and technical questions. Call the following numbers for assistance:

Questions concerning the system, its use, and data retrievals:
- Peter Langen, data technician, (406) 444-5354

Questions concerning data, or other questions on MRIS:
- Jim Stimson, data manager, (406) 444-5356
- Janet Decker-Hess, project manager and fisheries, (406) 752-5501
- Gael Bissell, wildlife data, (406) 752-5501

Questions concerning software & hardware:
- Jim Senkler, programmer/analyst, (406) 444-5354

1.3 USING THE SYSTEM

1.3.1 Starting the Rivers Report Software

If you have a menu program on your computer, starting the Rivers Report is simply a matter of making the appropriate menu selection. If you do not have a menu program, from the DOS prompt change to the directory containing RPRIVERS.EXE. Next, type RPRIVERS and press Enter.

Several screens with introductory information will be displayed while the Rivers Report sets itself up. When the Rivers Report is ready you will see a message at the bottom of the screen **'Press enter when ready.'** Press any key and the opening screen will appear shortly (Figure 1).

```
Montana Rivers Information System
Rivers Report                                   08/18/1989

Select an Option

          DESIGN THE REPORT
Select/Change the report content
Select/Change the report format
Select/Change the record order in report
----------------------------------------
Display the report designed
Change the report title
----------------------------------------
          PRODUCE THE REPORT
Count the records
Display the report to the screen
Print the report
Print the report to a text file
----------------------------------------
Exit the Program
```

Figure 1. Opening Screen

1.3.2 Opening Screen

The opening screen presents you with a menu from which you can make selections and design data retrievals. To make selections you can:

1. use the arrow keys to move down to the desired menu item and press Enter, or

2. simply type the first letter of the menu item, this will position the highlight bar on the item, then press Enter.

Once you press the Enter key, you will be presented with a series of additional menus. You can select items from these menus in the same manner as just described.

1.4 ELEMENTS OF A RETRIEVAL

There are three elements of a retrieval.

1. **Design the Report.** There are three parts to designing retrievals for producing data reports.

   a. **Select/Change the report content** (Figure 1). This item determines how you will look for data. That is, will you use stream name, water code, final value class, county, or a combination of these parameters to find information on a particular stream?

   b. **Select/Change the report format** (Figure 1). This determines the amount of data included in the report. Examples of the four kinds of report formats available are shown beginning with Section 3.

   c. **Select/Change the record order in report** (Figure 1). This menu item selects, or activates, the appropriate data index to speed up the search. For example, if you're searching for a stream using the stream name, you want to activate the stream name index. This allows the software to locate records by searching a smaller ordered (alphabetized) list of stream names rather than searching the entire database.

2. **Review the Report.** Selecting **Display the report designed** (Figure 1) will display all of the selections you have made to the screen. This makes it easy to see exactly what you've done and see any mistakes you may have made so they can be changed.

3. **Produce the Report**. The options below '**PRODUCE THE REPORT**' allows you to choose how the report will be viewed.

   a. **Count the records** (Figure 1). This item will count the records meeting the criteria you selected in Designing the Report.

   b. **Display the report to the screen** (Figure 1) allows you to view the report on your computer terminal.

c. **Print the report** (Figure 1) allows you to send the report to a printer.

d. **Print the report to a text file** (Figure 1) allows you to create a permanent text file of the report which can be used in a word processing document.

2 EXAMPLES OF COMMON RETRIEVALS

The following four examples are provided to show you how to use the MRIS Rivers Report. If you make a mistake when you are going through these examples, just remember to use the Exit key to back up and return to the previous menu.

2.1 Searching by River Name

SELECTING THE REPORT CONTENT. The highlight bar is on **'Select/Change the report content'** when the Rivers Report is first started. Choose this item by pressing the Enter key. The following menu will appear (Figure 2).

```
Montana Rivers Information System
Rivers Report                                   10/04/1989

Use one or more of the following to select the records to be reported.
Press the Help key for more information on record selection.

                    River Names
                    DFWP Water Codes
                    DFWP Drainages
                    DFWP Wildlife Areas
                    Final Values
                    Counties
                    Design Your Own Query
                    ---------------------
                    Clear all Selections
                    Return to Main Menu
```

Figure 2. Select/Change the Report Content

The highlight bar is on the River Names selection when the menu appears, press Enter to choose this option. The next screen will appear (Figure 3a).

```
Montana Rivers Information System
Rivers Report                                   10/04/1989

                    Enter River Names

Enter up to 25 river names.  Press the Exit key when you are finished.
For help with river names and abbreviations press the Help key.

        River name
```

Figure 3a. Enter River Names

Type in the name **Grant Creek** and press Enter.

```
Montana Rivers Information System
Rivers Report                                    10/04/1989

                    Enter River Names

Enter up to 25 river names.  Press the Exit key when you are finished.
For help with river names and abbreviations press the Help key.

     River name

GRANT CREEK
```

Figure 3b. Enter River Names after entering GRANT CREEK

To finalize the selection, press the Exit key. This will return you to the opening screen (Figure 1).

SELECTING THE REPORT FORMAT. Now we need to specify how much information from the retrieved records will be included in the report. Use the arrow keys to move down to '**Select/Change the report format**', or simply type **S**, which will move the highlight bar to the next menu selection starting with the letter S. Once the bar is in place, press the Enter key. The next menu will appear (Figure 4).

```
Montana Rivers Information System
Rivers Report                                    10/04/1989

The current report format is: Brief value class summary report

        Press the Help key for descriptions of report format.

                    Select the report format

                 Brief value class summary report
                 Descriptive value class summary report
                 Resource summary report
                 Full report
```

Figure 4. Select the Report Format

For this retrieval, choose the first menu item by pressing Enter. The opening screen will return after you've made your selection.

SELECTING THE RIGHT DATA INDEX. The next step, and it is one of the most important, is to activate the appropriate data index for the type of search you are doing. Move down to the third item on the opening screen

'**Select/Change the record order in report**' and press Enter. The menu in Figure 5 will come up on the screen.

```
Montana Rivers Information System
Rivers Report                                    08/18/1989

The report will be in River Name order.

                    Select the report order

                    River Name
                    DFWP Water Code
                    DFWP Drainage/River Name
                    DFWP Wildlife Area
                    County
                    Record Number
```

Figure 5. Select the Report Order

Since we are searching for records by River Name, select River Name on this menu. You will be returned to the opening screen once you press the Enter key.

REVIEWING YOUR SELECTIONS. At this point, the required selections are completed. It is a good idea to review the selections you've made to check for errors or omissions. Use the fourth selection on the opening screen, '**Display the report designed**' to view your retrieval criteria (Figure 6).

```
Montana Rivers Information System
Rivers Report                                    08/18/1989

                    Report Parameters

The report will be in River Name order.

The report format is: Brief value class summary report


The following river names will be included:
   GRANT CREEK


                              Press Enter.
```

Figure 6. Display the Report Designed

CORRECTING MISTAKES OR CHANGING SELECTIONS. If you notice a mistake on this screen, you can go back to the appropriate section on the opening screen and make the required change. For example, let's change the River Name from Grant Creek to Rattlesnake Creek. Press Enter to get back to the opening screen. Choose '**Select/Change the report content**'. Now select '**River Name**' on the next screen. This will call up the following screen (Figure 7):

```
Montana Rivers Information System
Rivers Report                                   10/04/1989

                    Enter River Names

The following river names will be included:
   GRANT CREEK

                        Select One

                 Use current criteria
                 Enter new river names
                 Clear river names restrictions
```

Figure 7. Enter Rivers Names:
Choices When Names Have Already Been Entered

There are three options available. If you decide to use the current name shown simply press Enter. If you want to enter a different name move to the second item and press Enter. Keep in mind, when you enter new river names the old river names are gone. If you do not want to search for any river name, for instance you've decided to search by Final value class, then choose the third menu item to clear or erase the name shown.

Move down to the '**Enter new river names**' selection and press Enter which will bring up the screen shown in Figure 8a.

```
Montana Rivers Information System
Rivers Report                                   10/04/1989

                    Enter River Names

Enter up to 25 river names.  Press the Exit key when you are finished.
For help with river names and abbreviations press the Help key.

     River name
```

Figure 8a. Enter River Names

Type in **Rattlesnake Creek** and press Enter to finalize your new selection. You will see the name move into the "selected" location as shown in Figure 8b.

```
Montana Rivers Information System
Rivers Report                                    10/04/1989

                    Enter River Names

Enter up to 25 river names.  Press the Exit key when you are finished.
For help with river names and abbreviations press the Help key.

     River name

RATTLESNAKE CREEK
```

Figure 8b. Enter River Names after Entering Rattlesnake Creek

Exit this screen by pressing the Exit key which will return you to the opening screen.

RUNNING THE RETRIEVAL. At this point, you are ready to run the retrieval to search for any stream(s), named Rattlesnake Creek. There are several options to running the retrieval:

1. Count the number of records which meet your selected criteria,

2. Display the report to the screen,

3. Send the report to the printer, or

4. Send the output to a text file.

It is a good idea to count the number of records retrieved before you attempt printing or viewing the output on the screen. If you have a very large number of records, which is common for general searches, printing may not be your wisest choice for viewing the report. Instead, you may want to choose one of the other report options like sending the retrieval to a text file. You may need to make your retrieval more specific and reduce the number of records included in the report.

Note: any retrieval can be interrupted in progress by pressing any key during the retrieval.

For this exercise, select '**Count the records**' from the opening screen and press Enter. The program will 'crank away' for a short time and then indicate four records with the name Rattlesnake Creek have been located (Figure 9).

```
Montana Rivers Information System
Rivers Report                                   08/18/1989



                    Counting records

Records selected:          4

4 records counted.  Press enter.
```

Figure 9. Counting Records

Even though there were only four records found, let's change the above retrieval to make it more restrictive and reduce the number of records retrieved.

2.2 Searching by River Name and County

In the search just completed four Rattlesnake Creeks were found. If you're looking for a specific creek, for example, the Rattlesnake Creek in Missoula County, there is no need to retrieve all of the other records. It is possible to make the above search more specific by limiting it to Missoula county.

SELECTING THE REPORT CONTENT. To modify the first retrieval choose the '**Select/Change the report content**' option. Select Counties and the following screen will appear (Figure 10):

```
Montana Rivers Information System
Rivers Report                                   10/04/1989

                    Select Counties

Press (I) to select counties to be included in the report.
Press (E) to select counties to be excluded from the report.
```

Figure 10. Include or Exclude Counties in Report

The program is asking you to tell it whether the counties you will select will be included in the retrieval, or excluded from the retrieval. If you select include, counties you choose will be marked and the search will be limited to those counties. If you choose exclude, counties selected will be marked and the program will **not** retrieve records in those counties. Most of the time, the include selection is preferred.

Choose Include by typing the letter **I** and a new screen with a list of counties will come up on your screen (Figure 11).

```
Montana Rivers Information System
Rivers Report                                    10/04/1989

                    Select Counties

  Press (I) to select counties to be included in the report.
  Press (E) to select counties to be excluded from the report. Include

Available Counties

 Beaverhead
 Big Horn
 Blaine
 Broadwater
 Carbon
 Carter
 Cascade
 Chouteau
 Custer
 Daniels
 Dawson
 Deer Lodge
 Fallon
 ---- More ↓ ----
```

Highlight each county to be selected and press the enter key. (An arrow will appear next to the county selected). To deselect a county highlight the county and press enter (the arrow will disappear). Press the Exit key to end selections. For help press the Help key.

Figure 11. Select Counties

Move to '**Missoula**' using the arrow keys or by typing the letter **M** until the highlight bar is on that selection. Mark the county by pressing Enter, an arrow symbol will mark that county. You can remove the arrow and cancel the selection of the county by highlighting '**Missoula**' again and pressing Enter a second time. Use the Exit key twice to return to the opening screen.

SELECTING THE REPORT FORMAT. Let's use the same report format as we did for the first retrieval. As a result, you will not have to make a selection for this menu item.

SELECTING THE RIGHT DATA INDEX. Sometimes when you make changes in your retrieval, you will need to decide if you should activate a different data index to make the retrieval run faster. For the present example the options are:

1. **Leave the River Name index activated.** This means that the program will search an alphabetized list of stream names. It will move quickly to the first 'Rattlesnake Creek' and 'read' through all of the records with that name (4 records) to find the Rattlesnake Creek located in Missoula County.

2. **Activate the county index instead of the River name index.** Doing this causes the program to search a list of records organized by county name, that is, all of the records in Broadwater County are grouped

together, all of the records in Carbon County are grouped together, and so on. During the search, the program moves quickly down to the Missoula County group but then it must search every record in the group (over 250 records) for the name 'Rattlesnake Creek'.

To speed the retrieval, it is best to reduce the number of records the program has to search. Frequently, this is accomplished most effectively by searching by stream name with the stream name index activated. Option 1 is preferred for this search. Therefore, leave the River Name index active.

The rule of thumb in choosing the appropriate index is, if you are searching primarily by **one** of the above menu items, then select that index. For instance, if you are searching by Water Code, then activate the Water Code index. If you are searching by Wildlife Area only, then activate that index, and so on.

On the other hand, if you are searching by more than one of the above menu items, e.g. River Name and County, then it is best to determine which of the items (river name or county) is most restrictive.

For example, the most restrictive parameter for a stream is the Water Code because there is only one code for each stream. River name is also fairly restrictive but frequently there will be more than one stream with the same name (Rattlesnake Creek, Rock Creek, etc.). County is not very restrictive because there will be many streams in a particular county. So if you are searching by river name and county, river name is the more restrictive stream attribute and is the best index to activate.

REVIEWING YOUR SELECTIONS. From the opening screen, choose '**Display the report designed**'. Figure 12 is the screen you will see.

```
Montana Rivers Information System
Rivers Report                                    10/04/1989

Report Parameters

The report will be in River Name order.

The report format is: Brief value class summary report.

The following river names will be included:
   RATTLESNAKE CREEK

The following counties will be included:
   Missoula

Press enter.
```

Figure 12. Display the Report Designed

RUNNING THE RETRIEVAL. Now select the option to count the records and you will see that only one record is chosen. You can look at the record with the '**Display the report to the screen**' option to verify that you retrieved the correct record.

Comparing the different types of data reports will be discussed in more detail in section 3.

The example above is useful in showing you how to modify your retrieval conditions, but there is another way to isolate Rattlesnake Creek in Missoula County.

1. Display a descriptive value class summary report to the screen.

   A. From the opening screen choose '**Select/Change the report format**'.

   B. Choose the '**Descriptive value class summary report**' option from the report selection screen that appears. You will be returned to the opening screen after your selection.

2. Display the report to the screen.

   A. Choose '**Display the report to the screen**' option from the opening screen. The report will include the counties in which each of the Rattlesnake Creeks are located.

   B. Write down the Water Code when you have located the Rattlesnake Creek in Missoula county.

3. Search for the specific Water Code. (See Section **2.4 Searching by Fish, Wildlife and Parks Water Code.**)

Using this technique will allow you to restrict your search by constructing a very simple retrieval. Basically, the program will take a more direct route in locating the record than the first method. You will get the same results with either method but the second is a bit more efficient.

The exercise below will show you another type of retrieval and how to clear previous selections before running another search.

2.3 Searching by Final Value Class

This search is very useful for locating highly rated streams. The search can be made more specific by combining it with a specific county or basin restriction. For this example, let's search for streams rated outstanding for both Fisheries and Wildlife resources.

SELECTING RECORDS IN REPORT. Choose '**Select/Change the report content**' from the opening screen (Figure 13).

```
Montana Rivers Information System
Rivers Report                                   10/04/1989

Use one or more of the following to select the records to be reported.
Press the Help key for more information on record selection.

                    River Names
                    DFWP Water Codes
                    DFWP Drainages
                    DFWP Wildlife Areas
                    Final Values
                    Counties
                    Design Your Own Query
                    ---------------------
                    Clear all Selections
                    Return to Main Menu
```

Figure 13. Select/Change the Report Content

Clearing selection criteria. In this example, we want to search by Final Values. If you select Final Values without first clearing all previous selections, you will wind up searching by both the river name and county selections of the previous search, and the final values you select now. <u>As a rule, it is a very good idea to clear the old search criteria before you begin a new search.</u>

If you are unsuccessful in a search where you are fairly certain there should be information, select **'Display the report designed'** from the opening screen to make sure you have not forgotten to clear previous search conditions.

Clear the River Name and County restrictions by choosing **'Clear all selections'** and the program will tell you **'All record restrictions have been cleared. Press enter'**. Once you press Enter the previous screen (Figure 13) will return.

Entering new selection criteria. Choose **'Final Values'** and the next screen you will see is shown in Figure 14.

```
Montana Rivers Information System
Rivers Report                                   10/04/1989

                    Select Final Values

Select a resource area. You can then select final values.  More than
one resource area may be selected.

                    Fish
                    Wildlife
                    Recreation
                    Natural Features
                    Geologic Features
                    Cultural Features
                    Overall
```

Figure 14. Resources for Select Final Values

We will restrict the search to streams with value class 1 for Fish and Wildlife. Select **'Fish'** by pressing Enter. Once you choose a resource area the values selection screen will come up (Figure 15).

```
Montana Rivers Information System
Rivers Report                                    10/04/1989

                    Select Fisheries Values

Select the final values.  Press the Exit key to end or select another
resource area.

  Available Final Values

 1 - Outstanding          Highlight each value to be selected and
 2 - High value           press the enter key. (An arrow will appear
 3 - Substantial          next to the value selected).  To deselect a
 4 - Moderate             value highlight the value and press enter
 5 - Limited              (the arrow will disappear). Press the Exit
 9 - Unclassified/Unknown key to end selections.  For help press the
                          Help key.
```

Figure 15. Select Fisheries Values

Select '**1 - Outstanding**', and you will see an arrow appear next to your selection. (You can cancel a selection by highlighting the item a second time and pressing the Enter key again.) When you have finished marking final values, use the Exit key to return to the previous menu (Figure 14). Now select '**Wildlife**', and press Enter, and the values selection screen for wildlife will appear; now choose '**1 - Outstanding**', and press the Exit key to return to the screen shown in Figure 14. Press the Exit key again and the screen in Figure 16 will appear.

```
Montana Rivers Information System
Rivers Report                                    10/04/1989

You have selected final value criteria for more than one resource area.

Press (L) if a record must meet the final values in ALL of the
          resource areas to be reported.

Press (N) if a record can meet the final values in ANY of the resource
          areas to be reported.
```

Figure 16. Final Values for More Than One Resource Area

This is a 'and/or' question. Do you want the records chosen that have value class 1 for both Fish **and** Wildlife (if so, answer **L**), or do you want records that have class 1 values for either Fish **or** Wildlife (if so, answer **N**). For example, if you respond with an **L**, records will only be chosen if they have value class 1 in the Fish category and value class 1 in the Wildlife category. If you answer **N**, then any record having value class 1 in Fish will be selected regardless of what value it has in Wildlife, and any record having value class 1 in Wildlife will be selected regardless of what value it has in Fish.

For this retrieval, respond with an **L** which will give us records with the highest value in both Fish and Wildlife. Once you make your selection you will return to the menu shown below (Figure 17).

```
Montana Rivers Information System
Rivers Report                                   10/04/1989

Use one or more of the following to select the records to be reported.
Press the Help key for more information on record selection.

                    River Names
                    DFWP Water Codes
                    DFWP Drainages
                    DFWP Wildlife Areas
                    Final Values
                    Counties
                    Design Your Own Query
                    ---------------------
                    Clear all Selections
                    Return to Main Menu
```

Figure 17. Select/Change the Report Content

Now move the highlight bar to '**Counties**' and press Enter. Type **I** to search only the county you select. Select '**Beaverhead**' county then press the Exit key to return to the opening screen.

SELECTING THE REPORT FORMAT. Choose '**Select/Change the report format**' to bring up the following screen (Figure 18a).

```
Montana Rivers Information System
Rivers Report                                   10/04/1989

The current report format is: Brief value class summary report

        Press the Help key for descriptions of report format.

                    Select the report format

                    Brief value class summary report
                    Descriptive value class summary report
                    Resource summary report
                    Full report
```

Figure 18a. Select the Report Format

Choose '**Full report**', press Enter, and the screen in Figure 18b will appear.

```
Montana Rivers Information System
Rivers Report                                    10/04/1989

The current report format is: Full report

Available Resources

Fish                    Highlight each resource to be reported and press
Wildlife                the enter key. (An arrow will appear next to the
Recreation              resource selected). To deselect a resource
Natural Features        highlight the resource and press enter. (the
Geologic Features       arrow will disappear). Press the Exit key to end
Cultural Features       selections. For help press the Help key.
```

Figure 18b. Select the Report Format: Available Resources

This screen allows you to select the type of resource information to be included in the report. You can choose any or all of the items on the menu. To make a selection, move the highlight bar to the resource area you want included and press the enter key. You will see an arrow appear next to the selection. If you change your mind you can cancel the selection by highlighting the item a second time and pressing the Enter key again. This makes the arrow disappear. When you finish choosing resources use the Exit key to return to the opening screen.

SELECTING THE RIGHT DATA INDEX. Move down to '**Select/Change the record order in report**' and press Enter (Figure 19).

```
Montana Rivers Information System
Rivers Report                                    10/04/1989

The report will be in River Name order.

                    Select the report order

                    River Name
                    DFWP Water Code
                    DFWP Drainage/River Name
                    DFWP Wildlife Area
                    County
                    Record Number
```

Figure 19. Select the Report Order

The best way to streamline this particular search is to activate the County index. This means the program will only have to search the records in Beaverhead County to locate records with a value class of 1 in Fish and Wildlife. Move down to the '**County**' selection and press Enter. You will be returned to the opening screen once you press the Enter key.

REVIEWING YOUR SELECTIONS. Use '**Display the report designed**' to view your retrieval criteria (Figures 20a and 20b).

```
Montana Rivers Information System
Rivers Report                                                    10/04/1989

                    Report Parameters

The report will be in County order.

The report format is: Full report.

Resources to be reported:
   Fish                    Wildlife                Recreation
   Cultural Features

The following fish values will be included:
   1

The following wildlife values will be included:
   1

   Records have to meet the final values for all of the resource areas to
   be reported.


                    Press any key to see more.
```

Figure 20a. Display the Report Designed (Part 1)

```
Montana Rivers Information System
Rivers Report                                                    10/04/1989

The following counties will be included:
   Beaverhead


                    Press enter.
```

Figure 20b. Display the Report Designed (Part 2)

RUNNING THE RETRIEVAL. Press Enter to return to the opening screen. Now you can look at the records retrieved with the '**Display the report to the screen**' option. The full report delivers all of the information that exists for a record.

Before discussing the various report types and interpreting the information presented in each one, there are two more retrieval examples provided. If you feel that you do not need the additional examples, you can skip to Section 3. The final two examples cover FWP water code searches and the construction of Ad Hoc queries.

Note: if you plan to try some retrievals on your own at this time, remember that you will need to clear some or all of the selections made during previous

retrievals. This is not done automatically when you choose new search criteria. If you don't remember how to clear selections, look at the following example retrieval.

2.4 Searching by Fish, Wildlife and Parks Water Code

SELECTING THE REPORT CONTENT. From the opening screen choose '**Select/Change the report content**' to see the next screen (Figure 21):

```
Montana Rivers Information System
Rivers Report                                   10/04/1989

Use one or more of the following to select the records to be reported.
Press the Help key for more information on record selection.

                    River Names
                    DFWP Water Codes
                    DFWP Drainages
                    DFWP Wildlife Areas
                    Final Values
                    Counties
                    Design Your Own Query
                    ---------------------
                    Clear all Selections
                    Return to Main Menu
```

Figure 21. Select/Change the Report Content

Clearing selection criteria. In this example, we want to search by Water Code. If you select the Water Code option and enter a code without first clearing all previous selections, you will wind up searching by both the final value and county selections of the previous search, and the water code you enter now. Your search will be unsuccessful, unless you happen to choose a water code for a stream found in Beaverhead County with final values of 1 in both Fish and Wildlife. Again, as a rule, it is a very good idea to clear the old search criteria before you begin a new search.

If you are unsuccessful in a search where you are fairly certain there should be information, select '**Display the report designed**' from the opening screen to make sure you have not forgotten to clear previous search conditions.

Clear the Final Value and County restrictions by choosing '**Clear all selections**' and the program will tell you '**All record restrictions have been cleared. Press enter**'. Once you press Enter the previous screen (Figure 21) will return.

Entering new selection criteria. Selecting '**DFWP Water Code**' and pressing Enter will bring up the following screen (Figure 22).

```
Montana Rivers Information System
Rivers Report                                  10/04/1989

                    Enter Water Codes

Enter up to 25 water codes.  Press the Exit key when you are finished.
For help press the Help key.

    Water code
```

Figure 22. Enter Water Codes

Type in **162420** and **162500,** pressing Enter after each entry. Use the Exit key to return to the opening screen.

SELECTING THE REPORT FORMAT. Now choose '**Select/Change the report format**' from the opening screen. Choose '**Resource summary report**' from the report selection screen (Figure 23a). Your selection will bring up an additional screen shown in Figure 23b.

```
Montana Rivers Information System
Rivers Report                                  08/18/1989

The current report format is: Brief value class summary report

                    Select the report format

                 Brief value class summary report
                 Descriptive value class summary report
                 Resource summary report
                 Full report
```

Figure 23a. Select the Report Format

```
Montana Rivers Information System
Rivers Report                                   10/04/1989

The current report format is: Full report

Available Resources

Fish                ◄   Highlight each resource to be reported and press
Wildlife            ◄   the enter key. (An arrow will appear next to the
Recreation          ◄   resource selected). To deselect a resource
Natural Features        highlight the resource and press enter. (the
Geologic Features       arrow will disappear). Press the Exit key to end
Cultural Features   ◄   selections. For help press the Help key.
```

Figure 23b. Select the Report Format: Available Resources
Note: Screen is shown as it would appear after selections have been made.

This screen will appear each time you choose the Resource summary report or the Full report. To make a selection, position the highlight bar on a menu item that does not have an arrow and press Enter. You will see an arrow appear next to your selection. You can cancel a selection by highlighting the item a second time and pressing the Enter key again.

For this report, choose **Fish**, **Wildlife**, **Recreation**, and **Cultural Features**. You should see arrows next to each item selected as in Figure 23b. To return to the opening screen press the Exit key.

CHANGING THE REPORT ORDER. Choose '**Select/Change the record order in report**' from the menu and select the '**DFWP Water Code**' option on the next menu to activate the water code index. You have now made all of the required selections and can run the retrieval.

REVIEWING YOUR SELECTIONS. Review the settings to see if your retrieval is ready to be executed (Figure 24).

```
Montana Rivers Information System
Rivers Report                                    08/18/1989

Report Parameters

The report will be in County order.

The report format is: Resource summary report.

Resources to be reported:
   Fish                    Wildlife                Recreation
   Cultural Features

The following counties will be included:
    Beaverhead

The following fish values will be included:
   1

The following wildlife values will be included:
   1

Press enter.
```

Figure 24. Display the Report Designed

RUNNING THE RETRIEVAL. Press enter to return to the opening screen. You can now select any of the **PRODUCE THE REPORT** options.

2.5 How to Design Your Own Query

The previous examples show you the kinds of searches that can be constructed using the pre-set menus. For the most part, the retrievals generated through the menus are sufficient. However, for some users, such retrievals may not be specific enough, or may provide too much unnecessary information.

To overcome these limitations, we have included the capability to construct very focused searches. In this manual, we refer to these restrictive, focused searches as Ad Hoc queries.

The Ad Hoc queries can, for example, be used to:

1. Locate stream reaches where kayaking is the primary activity on moderate to major rapids and where road access is good to excellent.

2. Pinpoint waterfowl protected areas within specific counties.

3. Identify core habitat areas for grizzly bears.

4. Locate areas that have abundant elk.

5. Find areas where a specific type of geologic feature (e.g. fault zones, glacial moraines, type sections) is present.

To use Ad Hoc queries you will need a fairly good working knowledge of the MRIS database structures and be able to write search expressions in dBase III style. Specifically, you must determine which of the several MRIS databases (see Appendix B) you need to use and the name of the field, or fields, you wish to search.

For instance, if you were conducting the search for grizzly bear core habitat areas, you would need to use the Wildlife Species database, search the 'SPECIES' field for 'grizzly bear', and search the 'TE_VAL' field for the parameter indicating core habitat.

The Design Your Own Query screens will help you construct the query by leading you through the important steps. **However, a word of warning is necessary here. Ad Hoc queries are definitely advanced database operations that will not work unless they are constructed correctly.** We suggest you familiarize yourself thoroughly with the MRIS databases, what fields they contain, how the data were collected, how the data should be interpreted, etc., before you try to construct complex Ad Hoc queries.

A good way to become familiar with the MRIS databases is to look through Appendix B of this manual and the Rivers Study Final Report. Any database and field listed in Appendix B can be used to construct Ad Hoc searches, and the Final Report will show you how the data have been interpreted and used.

As far as learning how to write search expressions, you can activate the online help while you're in the Ad Hoc screens and examine the examples provided. With a little practice and patience, you will be able to create very focused and effective queries. The following example on grizzlies core habitat will be used to help you learn how to use the Ad Hoc query option.

SELECTING THE REPORT CONTENT. Choose the **'Select/Change records in report'** from the opening screen. From the screen in Figure 25, choose **'Design Your Own Query'**.

```
Montana Rivers Information System
Rivers Report                                   10/23/1989

Use one or more of the following to select the records to be reported.
Press the Help key for more information on record selection.

                    River Names
                    DFWP Water Codes
                    DFWP Drainages
                    DFWP Wildlife Areas
                    Final Values
                    Counties
                    Design Your Own Query
                    ---------------------
                    Clear all Selections
                    Return to Main Menu
```

Figure 25. Select/Change the Report Content

The following screen (Figure 26) will appear after you press the Enter key.

```
Montana Rivers Information System
Rivers Report                                   10/23/1989

                    Design your own Query

Fish                Select from one or more of these databases to
Fish Species        design your query.  After you have selected a
Wildlife Units      database you can then enter the query.  After
Wildlife Species    entering the query you can select another database
Recreation          or press the Exit key to end the selections.
Rivers              Consult the MRIS users manual for database
                    structures and species lists. For more help press
                    the Help key.
```

Figure 26. Design Your Own Query - Select the Database

This screen allows you to select the MRIS database to use for your search and alerts you to online help. It is useful to view the online help screens before you design a query. To do so, press the Help key and use the arrow keys to

scroll through the help screen. When you are finished viewing the help screens press the Exit key to return to the menu.

In this example, you will search for information on a specific wildlife species, so select **'Wildlife Species'** to move to the next screen (Figure 27).

```
Montana Rivers Information System
Rivers Report                                   10/23/1989

WILDSPEC File Filter

Put quotes around character fields.  Place periods before and after
.NOT., .AND. or .OR.  Species list is in the user's manual.
UPPER(SPECIES) is needed for all species queries.

Example: To search for all units with abundant elk:

          UPPER(SPECIES) = 'ELK' .and. GAME_VAL = 3
```

Figure 27. Enter WILDSPEC File Filter

This screen presents you with an area where you will type in your search expressions. Several things are critical here. First, you must know the precise name of the field(s) to use and the type of field you are working with, that is, whether it is a character, numeric, date, or logical field. This information is available in Appendix B. Second, you must type the expression in a way that conforms to dBase III syntax. This screen (Figure 27) and other similar screens provide you with explanations and examples of typical expressions.

For this exercise, we want to locate areas that contain 'core habitat' for grizzly bears. Specifically, we will search for records with the words 'grizzly bear' in the species field and the parameter code indicating core habitat in the TE_VAL field. The Wildlife Database Structure in Appendix B provides you with the codes used in the TE_VAL field and their meaning. From this page we find that the core habitat areas are indicated by the number 2. Therefore, following the example expression on the screen, the search expression will look like this:

UPPER(SPECIES) = "GRIZZLY BEAR" .AND. TE_VAL = 2

Note that quotation marks are only needed for character fields. Since TE_VAL is a numeric field, no quotation marks are needed. Once you finish typing the expression, press return and the system will check to see whether your expression is a valid dBase expression. An error message will appear if you have made a mistake and you will have to re-enter the expression correctly before the system will allow you to continue. If you are unable to enter a valid expression, erase the entire expression and press the Enter key.

If the syntax is correct, the first Design Your Own Query screen (Figure 26) will return. You could select another database at this point and enter another expression which would be executed in conjunction with the previous expression. For the example we've chosen, simply hit the exit key to return you to the previous screen (Figure 28), shown below.

```
Montana Rivers Information System
Rivers Report                                   10/23/1989

Use one or more of the following to select the records to be reported.
Press the Help key for more information on record selection.

        River Names
        DFWP Water Codes
        DFWP Drainages
        DFWP Wildlife Areas
        Final Values
        Counties
        Design Your Own Query
        ---------------------
        Clear all Selections
        Return to Main Menu
```

Figure 28. Select/Change the Report Content

Before running the retrieval, restrict the search to Flathead County and activate the county index. See Section 2.2 if you don't remember how to select a county and activate the index.

REVIEWING YOUR SELECTIONS. From the opening screen, choose **'Display the report designed'** to see the screen in Figure 29 and to make sure your retrieval will provide the information you need.

```
Montana Rivers Information System
Rivers Report                                  10/23/1989

                    Report Parameters

The report will be in County order.

The report format is: Full report.

Resources to be reported:
   Wildlife

The following counties will be included:
   Flathead

WILDSPEC file filter is set to:
 UPPER(SPECIES) = "GRIZZLY BEAR" .AND. TE_VAL = 2
```

Figure 29. Display the Report Designed

RUNNING THE RETRIEVAL. Now press Enter to return to the opening screen. You can now select any of the **PRODUCE THE REPORT** options. After you examine the report, you may want to try some other Ad Hoc queries. To begin, try some of the examples provided on the Design Your Own Query screens. After you have more experience with the Ad Hoc features, you can try more complex retrievals.

3 GENERATING REPORTS

3.1 Overview

In the previous examples you have selected different types of reports and displayed them to the screen. In this section, re-enter the retrieval you designed in Section 2.4 **Searching by Fish, Wildlife and Parks Water Codes** and print it out in each of the four available formats. This will help you to see which of the formats you prefer. Obviously, your preference may change depending on the kind of search you do, the kind of questions you need answered, and the level of detail you desire.

In addition to selecting the report format, the MRIS Rivers Report software also gives you several options in where you send the report. These options can be seen under **PRODUCE THE REPORT** on the opening screen shown below.

```
Montana Rivers Information System
Rivers Report                                   08/18/1989

                    Select an Option

            DESIGN THE REPORT
Select/Change the report content
Select/Change the report format
Select/Change the record order in report
---------------------------------------
Display the report designed
Change the report title
---------------------------------------
            PRODUCE THE REPORT
Count the records
Display the report to the screen
Print the report
Print the report to a text file
---------------------------------------
Exit the Program
```

Figure 30. Opening Screen

The first option allows you to count the records included in your retrieval. This is a very good thing to do **prior** to printing a report so that you have some idea of how big the printout will be and how long it will take to print. If the report is very large, you may want to redesign your retrieval to reduce the number of records included, or you may want to send the report to a text file on a floppy disk.

The other options available are to display the report to the screen (which you have already done), print the report on your printer, and print the report to a text file (which simply sends the report to a text file on your hard disk or to a floppy disk). Each one of these options will be demonstrated below.

3.2 Brief value class summary report

From the opening screen, choose '**Select/Change the report format**' which will bring up the report selection screen below (Figure 31).

```
Montana Rivers Information System
Rivers Report                                   08/18/1989

The current report format is: Brief value class summary report

Select the report format

Brief value class summary report
Descriptive value class summary report
Resource summary report
Full report
```

Figure 31. Select the Report Format

Choose the '**Brief value class summary report**' and when you return to the opening screen select '**Print the report**'. The printout is shown below.

```
Montana Rivers Information System                    10/05/1989
Rivers Report

                          Water        Wild                          Over
River Name                Code    Fish  life  Rec  Nat  Geo  Cult   all
-----------------------------------------------------------------------
MISSOURI RIVER SEC 01     162420   1     2    3    2    2    1      1
MISSOURI RIVER SEC 05     162500   1     2                   1      1
:                                                                    :
:                                                                    :
```

Figure 32. Example of Brief Summary Report

As you can see, this report is a quick way to see the values assigned to each resource and the overall value rating for the selected reach. However, if you need more detailed information you will have to use one of the other report formats.

3.3 Descriptive value class summary report

From the opening screen re-select '**Select/Change the report format**' and on the report selection screen choose '**Descriptive value class summary report**'. Now print the report using the print option on the opening screen. The report is shown below.

```
                    Montana Rivers Information System          10/05/1989
                              Rivers Report

MISSOURI RIVER SEC 01                  Water Code: 162420  Wildlife Area: JGB
DFWP Basin: 16       Missouri (below Marias River)

    DFWP Region: 6
USGS Basin: 10060001 Prarie Elk - Wolf
Tributary to: MISSISSIPPI RIVER
Upper Boundary: BIG MUDDY CREEK                T28NR55E33
Lower Boundary: STATE LINE                     T26NR59E24
Counties: McCone, Richland, Roosevelt, Valley
                    ---------- Value Classes ----------
    Fish   Wildlife   Recreation   Natural   Geologic   Cultural   Overall
                                   Features  Features   Features
      1        2            3         2         2          1         1

MISSOURI RIVER SEC 05                  Water Code: 162500  Wildlife Area: JGB
DFWP Basin: 16       Missouri (below Marias River)

    DFWP Region: 6
USGS Basin: 10060001 Prarie Elk - Wolf
Tributary to: MISSISSIPPI RIVER
Upper Boundary: FT PECK DAM                    T26NR41E15
Lower Boundary: MILK RIVER                     T27NR42E32
Counties: McCone, Valley
                    ---------- Value Classes ----------
    Fish   Wildlife   Recreation   Natural   Geologic   Cultural   Overall
                                   Features  Features   Features
      1        2                                          1         1
```

Figure 33. Example of Descriptive Value Class Summary Report

This format provides more information on the stream reach, geographical location, the basics of the resource values, and the overall value rating.

3.4 Resource summary report

From the opening screen, choose '**Select/Change the report format**'. Choose '**Resource summary report**' from the report selection screen and the screen below will appear.

```
Montana Rivers Information System
                    Rivers Report                    10/04/1989

 The current report format is: Full report

 Available Resources

 Fish                 Highlight each resource to be reported and press
 Wildlife             the enter key. (An arrow will appear next to the
 Recreation           resource selected).  To deselect a resource
 Natural Features     highlight the resource and press enter.  (the
 Geologic Features    arrow will disappear).  Press the Exit key to end
 Cultural Features    selections.  For help press the Help key.
```

Figure 34. Select the Report Format: Available Resources

With this report format, you are given the opportunity to choose what resource data will appear in the report. To make a selection, position the highlight bar on a menu item and press Enter. You will see an arrow appear next to your selection. You can cancel a selection by highlighting the item a second time and pressing the Enter key again. For this report, choose **Fish**, **Wildlife**, **Recreation**, and **Cultural Features**. You should see arrows next to each item selected. To return to the opening menu press the Exit key. Now print the report. The printout is shown below.

```
                    Montana Rivers Information System          10/05/1989
                              Rivers Report

MISSOURI RIVER SEC 01                  Water Code: 162420  Wildlife Area: JGB
DFWP Basin: 16       Missouri (below Marias River)

    DFWP Region: 6
USGS Basin: 10060001 Prarie Elk - Wolf
Tributary to: MISSISSIPPI RIVER
Upper Boundary: BIG MUDDY CREEK                T28NR55E33
Lower Boundary: STATE LINE                     T26NR59E24
Counties: McCone, Richland, Roosevelt, Valley
                      ---------- Value Classes ----------
    Fish   Wildlife   Recreation   Natural   Geologic   Cultural   Overall
                                   Features  Features   Features
      1        2            3         2         2          1         1

--------------------- Fishery Assessment Summary Data ----------------------
Reach: 001  BIG MUDDY CREEK - STATE LINE
Serial: BOZ                            Length:  52.8 mi.
Values: Sport Fishery:  2  Habitat & Species:  1  Final:  1
Reach: 002  MILK RIVER - BIG MUDDY CREEK
Serial: 759                            Length: 105.7 mi.
Values: Sport Fishery:  2  Habitat & Species:  1  Final:  1

--------------------- Wildlife Assessment Summary Data ---------------------
Reach Upper: POPLAR RIVER     Unit Code: JA9
      Lower: N DAKOTA STATE L Unit Name: MISSOURI RIVER M
                              Unit type: Mainstem
Values: Habitat:  2  Species:  2  Final:  2
Reach Upper: MILK RIVER       Unit Code: JGB
      Lower: POPLAR RIVER     Unit Name: MISSOURI RIVER M
                             Unit type: Mainstem
Values: Habitat:  3  Species:  2  Final:  2

-------------------- Recreation Assessment Summary Data --------------------
Section:  1   CULBERTSONHWY16 - N DAKOTA BORDER  Length: 32
Values: DFWP:  4  BLM:  3  USFS:     Final:  3
Section:  2   WOLFPOINT HWY13 - CULBERTSONHWY16  Length: 75
Values: DFWP:  3  BLM:  3  USFS:     Final:  3
Section:  3   FORT PECK DAM - WOLFPOINT HWY13    Length: 66
Values: DFWP:  3  BLM:  3  USFS:     Final:  3

---------------- Cultural Features Assessment Summary Data ----------------
Site:  527
Values: Value A:  9  Value B:  9  Value C: 9  Value D:  9  Final:  1
```

Figure 35a. Example of Resource Summary Report (Page 1)

```
                    Montana Rivers Information System          10/05/1989
                              Rivers Report

MISSOURI RIVER SEC 05                  Water Code: 162500  Wildlife Area: JGB
OFWP Basin: 16       Missouri (below Marias River)

    DFWP Region: 6
USGS Basin: 10060001 Prarie Elk - Wolf
Tributary to: MISSISSIPPI RIVER
Upper Boundary: FT PECK DAM                    T26NR41E15
Lower Boundary: MILK RIVER                     T27NR42E32
Counties: McCone, Valley
                      ---------- Value Classes ----------
    Fish   Wildlife   Recreation   Natural   Geologic   Cultural   Overall
                                   Features  Features   Features
      1        2                                           1         1

--------------------- Fishery Assessment Summary Data ----------------------
Reach: 000  FT PECK DAM - MILK RIVER
Serial: 757                            Length:   8.2 mi.
Values: Sport Fishery:  3  Habitat & Species:  1  Final:  1

--------------------- Wildlife Assessment Summary Data ---------------------
Reach Upper: FT PECK DAM      Unit Code: JGB
      Lower: MILK RIVER       Unit Name: MISSOURI RIVER M
                              Unit type: Mainstem
Values: Habitat:  3  Species:  2  Final:  2

-------------------- Recreation Assessment Summary Data --------------------
                 This reach was not rated for recreation.

---------------- Cultural Features Assessment Summary Data -----------------
Site:   67
Values: Value A:  9  Value B:  9  Value C: 9  Value D:  9  Final:  1
Site:   68
Values: Value A:  9  Value B:  9  Value C: 9  Value D:  9  Final:  1
Site:   69
Values: Value A:  9  Value B:  9  Value C: 9  Value D:  9  Final:  1
```

Figure 35b. Example of Resource Summary Report (Page 2)

The first part of this report is basically identical to the Descriptive value class summary report. The following sections provide detailed information on each resource for each of the two selected reaches. This report is useful if you need to know which parameters were used to evaluate each resource and arrive at the individual and overall score.

3.5 Full report

Use the opening screen to bring up the report selection screen. This time choose the '**Full report**' option. You will again be presented with the screen to select resource information to include in the report. Select the same resources as in the previous example. The screen will be identical to the one shown below when you finish.

```
Montana Rivers Information System
                    Rivers Report                    10/04/1989

 The current report format is: Full report

 Available Resources

 Fish              ◄   Highlight each resource to be reported and press
 Wildlife          ◄   the enter key. (An arrow will appear next to the
 Recreation        ◄   resource selected).  To deselect a resource
 Natural Features      highlight the resource and press enter.  (the
 Geologic Features     arrow will disappear).  Press the Exit key to end
 Cultural Features ◄   selections.  For help press the Help key.
```

Figure 36. Select the Report Format: Available Resources

Return to the opening screen and print the report.

```
                    Montana Rivers Information System          10/05/1989
                              Rivers Report

MISSOURI RIVER SEC 01                  Water Code: 162420  Wildlife Area: JGB
DFWP Basin: 16       Missouri (below Marias River)

    DFWP Region: 6
USGS Basin: 10060001 Prarie Elk - Wolf
Tributary to: MISSISSIPPI RIVER
Upper Boundary: BIG MUDDY CREEK                T28NR55E33
Lower Boundary: STATE LINE                     T26NR59E24
Counties: McCone, Richland, Roosevelt, Valley
                     ---------- Value Classes ----------
    Fish   Wildlife   Recreation   Natural   Geologic   Cultural   Overall
                                   Features  Features   Features
      1        2            3         2         2          1         1

--------------------- COMPLETE FISHERY ASSESSMENT DATA ---------------------
Reach: 001  BIG MUDDY CREEK - STATE LINE
Serial: BOZ                            Length:  52.8 mi.
Values: Sport Fishery:  2  Habitat & Species:  1  Final:  1
Trout biomass: 0 lbs/1000ft (0.0 kg/300m)
Fishing days/yr/mi: 43 (269 dy/yr/10km)          Overall FMD: 2367
Ingress rating: Permitted              Esthetics rating: Average

                 ---------- Fish species abundance ----------
    PADDLEFISH      : Abundant
                      Genetics rating: Potentially pure
                      Habitat rating: Best
    PALLID STURGEON : Rare
                      Genetics rating: Potentially pure
                      Habitat rating: Best
    SHORTNOSE GAR   : Rare
                      Genetics rating: Potentially pure
                      Habitat rating: Best
    NORTHERN PIKE   : Common
    CHANNEL CATFISH : Common w/ proportional no. large fish
    BURBOT          : Abundant w/ proportional no. large fish
    GOLDEYE         : Abundant
    RIVER CARPSUCKER: Common
    WHITE SUCKER    : Common
    BIGMOUTH BUFFALO: Common
    SMALLMOUTH BUFF : Common
    SHORTHD REDHORSE: Common
    SAUGER          : Abundant
    WALLEYE         : Common
    SHOVELN STURGEON: Abundant w/ proportional no. large fish
    FRESHWATER DRUM : Uncommon
    LAKE CHUB       : Uncommon
    EMERALD SHINER  : Uncommon
    LONGNOSE SUCKER : Uncommon
    BLUE SUCKER     : Uncommon
    RAINBOW TROUT   : Rare
    YELLOW PERCH    : Rare
    COMMON CARP     : Abundant
    LONGNOSE DACE   : Rare
    BRASSY MINNOW   : Rare
    W SILVY/PLAINS M: Rare
    FLATHEAD CHUB   : Rare
    FATHEAD MINNOW  : Rare
    BLACK BULLHEAD  : Rare
```

Figure 37a. Example of a Full Report (Page 1)

```
                    Montana Rivers Information System          10/05/1989
                              Rivers Report

Reach: 001 BIG MUDDY CREEK - STATE LINE
Fishery Assessment Data Continued

    BRK STICKLEBACK : Rare
    IOWA DARTER     : Rare
    N REDBELLY DACE : Rare

Source: 06/77  NEEDHAM FWP

-------------------- Additional Fishery Assessment Reach --------------------
Reach: 002  MILK RIVER - BIG MUDDY CREEK
Serial: 759                          Length: 105.7 mi.
Values: Sport Fishery:  2  Habitat & Species:  1  Final:  1
Trout biomass: 0 lbs/1000ft (0.0 kg/300m)
Fishing days/yr/mi: 43 (269 dy/yr/10km)          Overall FMD: 4740
Ingress rating: Permitted            Esthetics rating: Average

            ---------- Fish species abundance ----------
    PADDLEFISH      : Abundant
                      Genetics rating: Potentially pure
                      Habitat rating: Best
    PALLID STURGEON : Rare
                      Genetics rating: Potentially pure
                      Habitat rating: Best
    SHORTNOSE GAR   : Rare
                      Genetics rating: Potentially pure
                      Habitat rating: Moderate
    NORTHERN PIKE   : Common
    CHANNEL CATFISH : Common w/ proportional no. large fish
    BURBOT          : Abundant w/ proportional no. large fish
    GOLDEYE         : Abundant
    RIVER CARPSUCKER: Common
    WHITE SUCKER    : Common
    BIGMOUTH BUFFALO: Common
    SMALLMOUTH BUFF : Common
    SHORTHD REDHORSE: Common
    SAUGER          : Abundant
    WALLEYE         : Common
    SHOVELN STURGEON: Abundant w/ proportional no. large fish
    FRESHWATER DRUM : Uncommon
    LAKE CHUB       : Uncommon
    EMERALD SHINER  : Uncommon
    LONGNOSE SUCKER : Uncommon
    BLUE SUCKER     : Uncommon
    RAINBOW TROUT   : Rare
    YELLOW PERCH    : Rare
    COMMON CARP     : Abundant
    LONGNOSE DACE   : Rare
    BRASSY MINNOW   : Rare
    W SILVY/PLAINS M: Rare
    FLATHEAD CHUB   : Rare
    FATHEAD MINNOW  : Rare
    STONECAT        : Rare
    BLACK BULLHEAD  : Rare
    BRK STICKLEBACK : Rare
    IOWA DARTER     : Rare
    RAINBOW SMELT   : Uncommon
```

Figure 37b. Example of a Full Report (Page 2)

```
                    Montana Rivers Information System          10/05/1989
                              Rivers Report

Reach: 002 MILK RIVER - BIG MUDDY CREEK
Fishery Assessment Data Continued

    N REDBELLY DACE : Rare

Source: 06/77  NEEDHAM FWP

-------------------- COMPLETE WILDLIFE ASSESSMENT DATA ---------------------
Reach Upper: POPLAR RIVER     Unit Code: JA9
      Lower: N DAKOTA STATE L Unit Name: MISSOURI RIVER M
                              Unit type: Mainstem
Values: Habitat:  2  Species:  2  Final:  2

                    ---------- Habitat Criteria ----------
Designated Habitat Protection: None
Riparian Habitat Quality
    Condition: Moderate                Forested: High
    Wetlands:  Moderate                Islands:  Moderate
    Diversity: Moderate

                    ---------- Species Criteria ----------
Threatened and Endangered Species
    Peregrine Falcon    : Historic Nest Site

Big Game Species: Existing Seasonal Use and Importance Value
    Whitetail Deer      : Year around       High
    Mule Deer           : Spring & Fall     High
    Sharptail Grouse    : Fall              Moderate

Other Game and Furbearing Species: Habitat Suitability/Potential
    Beaver              : Moderate
    Bobcat              : Low
    Wild Turkey         : Moderate
    Pheasant            : High
    Canada Goose        : High

Specialized Wildlife Use: Waterfowl staging areas, 'prime wetlands'
                          Areas with cormorant, heron, pelican colonies
                          Golden eagle nesting cliffs present

                    ---------- Category Points ----------
Land:   0  Rip. Qual:  55        T&E:  15    Game/Fur:  57     Spec. Wild:  30

------------------------ ADDITIONAL WILDLIFE UNITS -------------------------
Reach Upper: MILK RIVER       Unit Code: JGB
      Lower: POPLAR RIVER     Unit Name: MISSOURI RIVER M
                              Unit type: Mainstem
Values: Habitat:  3  Species:  2  Final:  2

                    ---------- Habitat Criteria ----------
Designated Habitat Protection: None
Riparian Habitat Quality
    Condition: Moderate                Forested: Moderate
    Wetlands:  Low                     Islands:  Moderate
    Diversity: Moderate
                         ---------- Species Criteria ----------
Threatened and Endangered Species
```

Figure 37c. Example of a Full Report (Page 3)

```
                    Montana Rivers Information System          10/05/1989
                              Rivers Report

Reach Upper: MILK RIVER      Lower: POPLAR RIVER          Unit Code: JGC
Wildlife Assessment Data Continued

Big Game Species: Existing Seasonal Use and Importance Value
    Whitetail Deer      : Year around      High
    Mule Deer           : Year around      Low
    Sharptail Grouse    : Year around      Moderate

Other Game and Furbearing Species: Habitat Suitability/Potential
    Beaver              : Low
    Bobcat              : Low
    Wild Turkey         : Low
    Pheasant            : Moderate
    Canada Goose        : Moderate

Specialized Wildlife Use: Waterfowl staging areas, 'prime wetlands'
                          Areas with cormorant, heron, pelican colonies
                          Golden eagle nesting cliffs present

                   ---------- Category Points ----------
Land:   0  Rip. Qual:  45        T&E:   0    Game/Fur:  38     Spec. Wild:  30

-------------------- COMPLETE RECREATION ASSESSMENT DATA --------------------
Section:  1   CULBERTSONHWY16 - N DAKOTA BORDER  Length: 32
Values: DFWP:  4  BLM:  3  USFS:     Final:  3
Rating Agencies: BLM only
Water Character: Flat                            Months/Yr. Boatable: 6
Motor Boating:   Secondary Activity
Boat Fishing:    Primary Activity
Shore Fishing:   Primary Activity
Picnicing:       Primary Activity

Use Level: Unknown                     Use Estimate: Low
Access: Moderate                       Scenic Quality: Moderate
ROS Class: Semi-primitive              No. of Developed Sites: 4

------------------ Additional Recreation Assessment Section ------------------
Section:  2   WOLFPOINT HWY13 - CULBERTSONHWY16  Length: 75
Values: DFWP:  3  BLM:  3  USFS:     Final:  3
Rating Agencies: BLM only
Water Character: Minor rapids                    Months/Yr. Boatable: 6
Motor Boating:   Secondary Activity
Boat Fishing:    Primary Activity
Shore Fishing:   Secondary Activity
Picnicing:       Secondary Activity

Use Level: Unknown                     Use Estimate: Moderate/Low
Access: Moderate                       Scenic Quality: Moderate
ROS Class: Semi-primitive              No. of Developed Sites: 1

------------------ Additional Recreation Assessment Section ------------------
Section:  3   FORT PECK DAM - WOLFPOINT HWY13    Length: 66
Values: DFWP:  3  BLM:  3  USFS:     Final:  3
Rating Agencies: BLM only
Water Character: Minor rapids                    Months/Yr. Boatable: 6
```

Figure 37d. Example of a Full Report (Page 4)

```
                    Montana Rivers Information System          10/05/1989
                              Rivers Report

Section:  3   FORT PECK DAM - WOLFPOINT HWY13
Recreation Assessment Data Continued

Motor Boating:   Secondary Activity
Tubing:          Primary Activity
Swimming:        Primary Activity
Boat Fishing:    Primary Activity
Shore Fishing:   Secondary Activity
Car Camping:     Secondary Activity
Picnicing:       Primary Activity

Use Level: Unknown                    Use Estimate: Moderate
Access: Moderate                      Scenic Quality: Moderate
ROS Class: Semi-primitive             No. of Developed Sites: 1

--------------------- COMPLETE CULTURAL FEATURES DATA ----------------------
Site:  527
Values: Value A:  9  Value B:  9  Value C: 9  Value D:  9  Final:  1

                         ---------- Location ----------
Map Name: SIDNEY
Description: Upper: 26N  59E Section  16        Lower: 26N  59E Section  24
USFS Forest:                          USFS District:
```

Figure 37e. Example of a Full Report (Page 5)

```
                    Montana Rivers Information System          10/05/1989
                              Rivers Report

MISSOURI RIVER SEC 05                  Water Code: 162500  Wildlife Area: JGB
DFWP Basin: 16       Missouri (below Marias River)

    DFWP Region: 6
USGS Basin: 10060001 Prarie Elk - Wolf
Tributary to: MISSISSIPPI RIVER
Upper Boundary: FT PECK DAM                    T26NR41E15
Lower Boundary: MILK RIVER                     T27NR42E32
Counties: McCone, Valley
                      ---------- Value Classes ----------
    Fish   Wildlife   Recreation   Natural   Geologic   Cultural   Overall
                                   Features  Features   Features
      1        2                                            1         1

--------------------- COMPLETE FISHERY ASSESSMENT DATA ---------------------
Reach: 000  FT PECK DAM - MILK RIVER
Serial: 757                            Length:   8.2 mi.
Values: Sport Fishery:  3  Habitat & Species:  1  Final:  1
Trout biomass: 0 lbs/1000ft (0.0 kg/300m)
Fishing days/yr/mi: 151 (938 dy/yr/10km)         Overall FMD: 1285
Ingress rating: Permitted              Esthetics rating: Average

                 ---------- Fish species abundance ----------
    PADDLEFISH      : Abundant
                      Genetics rating: Potentially pure
                      Habitat rating: Best
    PALLID STURGEON : Rare
                      Genetics rating: Potentially pure
                      Habitat rating: Best
    SHORTNOSE GAR   : Rare
                      Genetics rating: Potentially pure
                      Habitat rating: Best
    LAKE TROUT      : Common
    NORTHERN PIKE   : Common
    CHANNEL CATFISH : Common w/ proportional no. large fish
    BURBOT          : Abundant w/ proportional no. large fish
    GOLDEYE         : Abundant
    RIVER CARPSUCKER: Common
    WHITE SUCKER    : Common
    BIGMOUTH BUFFALO: Common
    SMALLMOUTH BUFF : Common
    SHORTHD REDHORSE: Common
    SAUGER          : Abundant
    WALLEYE         : Common
    SHOVELN STURGEON: Abundant w/ proportional no. large fish
    FRESHWATER DRUM : Uncommon
    LAKE CHUB       : Uncommon
    EMERALD SHINER  : Uncommon
    LONGNOSE SUCKER : Uncommon
    BLUE SUCKER     : Uncommon
    RAINBOW TROUT   : Rare
    YELLOW PERCH    : Rare
    COMMON CARP     : Abundant
    LONGNOSE DACE   : Rare
    BRASSY MINNOW   : Rare
    W SILVY/PLAINS M: Rare
    FLATHEAD CHUB   : Rare
    STONECAT        : Rare
```

Figure 37f. Example of a Full Report (Page 6)

```
                    Montana Rivers Information System          10/05/1989
                              Rivers Report

Reach: 000 FT PECK DAM - MILK RIVER
Fishery Assessment Data Continued

    BLACK BULLHEAD  : Rare
    BRK STICKLEBACK : Rare
    IOWA DARTER     : Rare
    N REDBELLY DACE : Rare

Source: 06/77  NEEDHAM FWP

-------------------- COMPLETE WILDLIFE ASSESSMENT DATA ---------------------
Reach Upper: FT PECK DAM      Unit Code: JGB
      Lower: MILK RIVER       Unit Name: MISSOURI RIVER M
                              Unit type: Mainstem
Values: Habitat:  3. Species:  2  Final:  2

                     ---------- Habitat Criteria ----------
Designated Habitat Protection: None
Riparian Habitat Quality
    Condition: Moderate                Forested: Moderate
    Wetlands:  Low                     Islands:  Moderate
    Diversity: Moderate

                     ---------- Species Criteria ----------
Threatened and Endangered Species

Big Game Species: Existing Seasonal Use and Importance Value
    Whitetail Deer      : Year around       High
    Mule Deer           : Year around       Low
    Sharptail Grouse    : Year around       Moderate

Other Game and Furbearing Species: Habitat Suitability/Potential
    Beaver              : Low
    Bobcat              : Low
    Wild Turkey         : Low
    Pheasant            : Moderate
    Canada Goose        : Moderate

Specialized Wildlife Use: Waterfowl staging areas, 'prime wetlands'
                          Areas with cormorant, heron, pelican colonies
                          Golden eagle nesting cliffs present

                     ---------- Category Points ----------
Land:   0  Rip. Qual:  45        T&E:   0    Game/Fur:  38     Spec. Wild:  30

------------------- COMPLETE RECREATION ASSESSMENT DATA --------------------
                   This reach was not rated for recreation.

--------------------- COMPLETE CULTURAL FEATURES DATA ----------------------
Site:   67
Values: Value A:  9  Value B:  9  Value C: 9  Value D:  9  Final:  1

                          ---------- Location ----------
Map Name: WOLF POINT
Description: Upper: 27N  47E Section  24        Lower: 27N  48E Section  14
USFS Forest:                            USFS District:
```

Figure 37g. Example of a Full Report (Page 7)

```
                    Montana Rivers Information System          10/05/1989
                              Rivers Report

-------------------- Additional Cultural Features Site ---------------------
Site:   69
Values: Value A:  9  Value B:  9  Value C: 9  Value D:  9  Final:  1

                         ---------- Location ----------
Map Name: WOLF POINT
Description: Upper: 27N  51E Section  30        Lower: 27N 51E Section  21
USFS Forest:                            USFS District:
```

Figure 37h. Example of a Full Report (Page 8)

This report shows you every piece of information on record for the selected stream reaches. It is the maximum level of detail you can obtain in a MRIS Rivers Report report.

APPENDIX A

Installation

Installation of the Montana Rivers Information System (MRIS) Rivers Report is a two step process:

1) Install the System Utilities.
2) Install MRIS Rivers Report proper.

I Install the System Utilities

The System Utilities require approximately 500,000 bytes.

The system utilities are used to customize the MRIS Rivers Report. They also include Automenu, a shareware menuing package, that creates a menu to run the Rivers Report and cutomization utilities. (Shareware is software, commonly available on bulletin boards, that you can try before purchasing.)

The system utilities should be installed in a directory that DOS searches for programs. Typically, directories like "\DOS", "\BIN" or "\TOOLS" are used. You can, however, create your own directory, e.g., "C:\ MRISUTIL" and include it in the PATH command in the AUTOEXEC.BAT file (See your DOS manual under "PATH" command and "AUTOEXEC.BAT" files for more information.)

To determine what directories DOS searches for programs type PATH at the DOS prompt:

C:\>**PATH**
PATH=C:\DOS;\C:\BATCH;C:\TOOLS

In this example, you could install the utilities in the C:\DOS, C:\BATCH, OR C:\TOOLS directories.

To install the system utilities in a directory not currently in the PATH you can create a directory, for example, D:\MRISUTIL by entering the following commands (shown in bold) at the DOS prompt:

C:\>**D:**
D:\>**MD MRISUTIL**
D:\>**CD MRISUTIL**
D:\MRISUTIL>

APPENDIX A (cont.)

The PATH is probably set by the AUTOEXEC.BAT file found in the root directory of the C drive. It might look similar to this:

```
C:
CD C:\
PATH=C:\DOS;C:\BATCH;C:\TOOLS
PROMPT $P$G
```

Use a text editor or word processor to change the AUTOEXEC.BAT file to read:

```
C:
CD C:\
PATH=C:\DOS;\C:\BATCH;C:\TOOLS;D:\MRISUTIL
PROMPT $P$G
```

If you are using a word processor that adds special codes to a file be sure to save the file as a DOS text or ASCII file.

The next time you reboot the computer D:\MRISUTIL will be included in the PATH. (See your DOS manual for more information about AUTOEXEC.BAT and PATH).

Copy the files from the System Utilities diskette to the directory and run SINSTALL. SINSTALL will extract the programs and files from their compressed format and erase the unneeded files.

II Install MRIS Rivers Report proper

Approximately 6,000,000 bytes are needed to install the MRIS Rivers Report.

You should create a separate directory, for example, MRISRIV, on which to install the Rivers Report by entering the following commands (shown in bold) at the DOS prompt:

```
C:\>D:
D:\>MD MRISRIV
D:\>CD MRISRIV
D:\MRISRIV>
```

APPENDIX A (cont.)

Copy the MRIS Rivers Report diskettes to the directory and run INSTALL. INSTALL will extract the programs and files from their compressed format and erase the unneeded files. It will then run a program to create most of the indices required by the Rivers Report program (the others are created as needed by the Rivers Report program).

III Starting the Rivers Report

Included on the System Utilities diskette is AUTOMENU, a shareware menu program (try it before you buy it). Included on the MRIS Rivers Report diskettes is a batch file which will start the menu. To run the MRIS Rivers Report change directories to the containing the Rivers Report (e.g. D:\MRISRIV), type RIVERS from the DOS prompt and AUTOMENU will be loaded. Select the Montana Rivers Report by typing the number in front of the menu item. If you do not want to use AUTOMENU you may run the Rivers Report by changing directories to the directory which contains RPRIVERS.EXE and entering RPRIVERS from the DOS prompt.

IV Customizing the Rivers Report

The MRIS Rivers Report can be customized to use different keys for the Help key and Exit key or to use different screen colors. To change the current configuration select the System Configuration menu item. See Appendix G for more information on the System Configuration program.

If you have DOS 3.3 or greater, we recommend you alter your AUTOEXEC.BAT file to include the SET CLIPPER=F35 line, alter your CONFIG.SYS file to have the FILES = 35 line, and copy RPRIVERS.AO to RPRIVERS.RPT for faster operation of the Rivers Report. See Appendix F for more information on the Report Definition FIle.

APPENDIX B

Database Structures

Master Rivers Database Structure - RIVERS.DBF

Field Name	Type	Width	Dec	Field Description
NAME	C	3	0	River Name (S FK, Creek, river, etc.)
WATERCODE	C	6	0	DFWP six-digit state watercode
J_CODE	C	3	0	DFWP wildlife unit (see wildlife map)
UPPER	C	30	0	Verbal description of upper boundary
LOWER	C	30	0	Verbal description of lower boundary
TRIB_TO	C	30	0	Verbal description of tributary to
REGION	C	1	0	DFWP Administrative region
LOWER_TRS	C	14	0	Legal description of lower boundary
UPPER_TRS	C	14	0	Legal description of upper boundary
HYDRO_UNIT	C	8	0	USGS Hydrologic Unit
USFS_FOR	C	2	0	USFS Forest Code (see Appendix C)
USFS_DIST	C	2	0	USFS Forest District (see Appendix C)
BLM_DIST	C	3	0	BLM District (see Appendix C)
BLM_AREA	C	4	0	BLM Area (see Appendix C)
FISH_FINAL	N	1	0	Final Fisheries Value (1-5)
WILD_FINAL	N	1	0	Final Wildlife Value (1-4)
REC_FINAL	N	1	0	Final Recreational Value (1-5)
NAT_FINAL	N	1	0	Final Natural Features Value (1-5)
GEO_FINAL	N	1	0	Final Geologic Features Value (1-5)
CULT_FINAL	N	1	0	Final Cultural Features Value (1-5)
FINAL_VAL	N	1	0	Final Overall Value (highest of above)
WATERCODE	C	6	0	DFWP watercode
SECTION	C	3	0	Three-digit section within the watercode (because of the possibility of multiple sections for a watercode there may be more than on FISH.DBF record for a RIVERS.DBF record)
SERIAL	C	3	0	Unique three-digit number describing the watercode and section
LOWER	C	30	0	Verbal description of the reach lower boundary
UPPER	C	30	0	Verbal description of the reach upper boundary
MLENGTH	N	6	1	Reach length in miles with one decimal place
LOWER_TRS	C	14	0	Lower legal description by township, range, and section (T08SR20E06D)
UPPER_TRS	C	14	0	Upper legal description by township, range, and section (T08R20E06D)
USFS_FOR	C	2	0	USFS Forest Code (see Appendix C)
USFS_DIST	C	2	0	USFS Forest District (see Appendix C)

APPENDIX B (cont.)

Fisheries Database Structure - FISH.DBF

Field Name	Type	Width	Dec	Field Description
SPAWN_VAL	N	1	0	Spawning habitat rating - a tributary stream reach with essential spawning habitat for a receiving stream that has a Class 1 or 2 sport fishery value is upgraded respectively to Class 1 habitat and species value; other important streams are advanced one class but not higher than Class 3.
SPRING_VAL	N	1	0	Spring creek value stream upgraded to Class 1 for outstanding spring creek value, Class 2 for high value, and Class 3 for substantial value
ING_RATING	C	1	0	Access or ingress rating 1 - 7 (for complete explanation, see the guidelines pg. 9) 1 = almost entirely public lands, 2 = mix of private and public where no significant portion of the stream is unavailable by vehicle and/or walking, 3 = ingress readily available by permission, 4 = ingress limited but some fishing is allowed, 5 = public fishing is available for a fee, 6 = little or no ingress by permission is allowed; floating precluded by stream size, 7 = bordered by public land by access through posted private land or locked gates
EST_RATING	C	1	0	Esthetics rating A - F A = outstanding natural beauty in a pristine setting, B = stream comparable to A but presence of human development, C = stream with natural beauty by more common type than A and B, D = fair esthetics, E = low esthetics, F = stream of national renown
FMD_10KM	N	5	0	Angler days per 10 kilometers (6 miles)
FMDOVERALL	N	7	0	Overall angler days for the entire stream
SPORT_FISH	N	1	0	Sport fishery value 1 = Outstanding, 2 = High value, 3 = Substantial, 4 = Moderate, 5 = Limited
SPEC_HAB	N	1	0	Habitat and Species value (1-5)
FINAL_VAL	N	1	0	Final fisheries resource value (1-5); higher of the Sport fishery or Habitat and Species value
SOURCEDATE	C	5	0	Date of last data input
SOURCE		55	0	Agency and person who input data

APPENDIX B (cont.)

Fish Species Database Structure - FISHSPEC.DBF

Field Name	Type	Width	Dec	Field Description
SERIAL	C	3	0	Unique three-digit number describing a fishery watercode and section; is also found in FISH.DBF
SPECIES	C	16	0	Species name (see below for the list of fish species found in Montana)
ABUNDANCE	C	1	0	Abundance of the species (A-Z) A = Abundant, B = Abundant with proportional number of large-size fish, C = Common, D = Common with proportional number of large-size fish, U = Uncommon, V = Uncommon with proportional number of large-size fish, R = Rare, E = Presence not verified but expected, I = immature fish only, N = not present, P = Species not present but could be present if introduced, Z = Abundance unknown
HABIT_VAL	C	1	0	Habitat rating (A-D) A = Best, B = Substantial, C = Moderate, D = Limited
GENE_VAL	C	1	0	Genetic rating (A-I) (see guidelines for further explanation, pg. 11) A = isolated genetically pure population, B = potentially pure population with no record of contaminating species in spawning areas, C = potentially pure population where no contaminating species exist, but records show contaminating species have been planted, D = especially valuable genetically pure cutthroat or bull trout population with contaminating species in the reach or drainage, E = potentially pure population where contaminating species are known to exist, G = genetically pure population, H = hybridized or introgressed population known to exist, I = genetically pure population where contaminating species could invade

APPENDIX B (cont.)

Fish Species List

Arctic Grayling
Bigmouth Buffalo
Black Bullhead
Black Crappie
Blue Sucker
Bluegill
Brassy Minnow
Brk Stickleback
Brook T X Bull T
Brook Trout
Brown Trout
Buffalo
Bull Trout
Bullhead
Burbot
Channel Catfish
Common Carp
Crappie
Creek Chub
Cutthroat Trout
Cutthroat Upr Mo
Cutthroat W Sl
Cutthroat Ylst
Emerald Shiner
Fathead Minnow
Flathead Chub
Freshwater Drum
Golden Shiner
Golden Trout
Goldeye
Goldfish
Green Sunfish
Iowa Darter
Kokanee
Lake Chub
Lake Trout
Lake Whitefish
Largemouth Bass
Largescale Suckr
Longnose Dace
Longnose Sucker
Minnow
Mottled Sculpin
Mountain Sucker
Mt Whitefish
N Redbelly Dace
N Squawfish
Native Rainbow T
Northern Pike
Paddlefish
Pallid Sturgeon
Peamouth
Pearl Dace
Plains Killifish
Plains Minnow
Pumpkinseed
Pygmy Whitefish
Rainbow Smelt
Rainbow Trout
Rainbow X Cutthr
Rainbow X Golden
Redb X Finesc D
Redb/Finesc Dace
Redside Shiner
River Carpsucker
Rock Bass
Sand Shiner
Sauger
Sauger/Walleye
Sculpin
Shorthd Redhorse
Shorthd Sculpin
Shortnose Gar
Shoveln Sturgeon
Sicklefin Chub
Slimy Sculpin
Smallmouth Bass
Smallmouth Buff
Spottail Shiner
Stonecat
Sturgeon
Sturgeon Chub
Sucker
Sunfish
Torrent Sculpin
Trout
Utah Chub
Variable Platy
W Silvery Minnow
W Silvy/Plains M
Walleye
White Crappie
White Sturgeon
White Sucker
Whitefish
Yellow Bullhead
Yellow Perch

APPENDIX B (cont.)

Wildlife Unit Database Structure - WILDUNIT.DBF

Includes location and general description of unit, designated lands, species of special concern, habitat condition, and final sub-values.

Field Name	Type	Width	Dec	Field Description
REGION	C	1	0	DFWP Administrative region
J_CODE	C	3	0	Wildlife unit number (see wildlife maps)
UNIT_CODE	C	1	0	Unit Type M = Mainstem, T = Tributaries of mainstem, B = Basin or drainage
TRIB_TO	C	20	0	Tributary to
USFS_FOR	C	2	0	USFS Forest code (see appendix C)
WS	N	1	0	Wild and Scenic River within unit boundaries (0 = no, 1 = yes)
NWR	N	1	0	National Wildlife Refuge present within unit boundary (0 = no, 1 = yes)
NFH	N	1	0	National Fish Hatchery present within unit boundary (0 = no, 1 = yes)
WMA	N	1	0	Wildlife Management Unit present within unit boundary (0 = no, 1 = yes)
WPA	N	1	0	Waterfowl Protection Area present within unit boundary (0 = no, 1 = yes)
NCA	N	1	0	Nature Conservancy Area present within unit boundary (0 = no, 1 = yes)
CE	N	1	0	Conservation Easement present within unit boundary (0 = no, 1 = yes)
RNA	N	1	0	USFS or BLM Research Natural Area present within unit boundary (0 = no, 1 = yes)
HAB_COND	N	1	0	Condition of the riparian zone (1-3) 1 = low, 2 = moderate, 3 = High
HAB_FOREST	N	1	0	Amount of mature forest in riparian zone (1-3) 1 = low, 2 = moderate, 3 = High
HAB_WET	N	1	0	Amount of wetland habitat in riparian zone (1-3) 1 = low, 2 = moderate, 3 = High
HAB_ISLAND	N	1	0	Amount of islands in riparian zone (1-3) 1 = low, 2 = moderate, 3 = High
HAB_DIV	N	1	0	Vegetative structure and diversity in the riparian zone (1-3) 1 = low, 2 = moderate, 3 = High
WTFWLSTG	N	1	0	Waterfowl staging areas, prime wetlands (0 = Absent, 1 = Present)
SPGS	N	1	0	Warm springs open in winter, used by waterfowl species (0 = Absent, 1 = Present)
AMPHIB	N	1	0	Habitats supporting amphibians of special concern (0 = Absent, 1 = Present) (see guidelines for list of species)

APPENDIX B (cont.)

REPTSCON	N	1	0	Habitats supporting reptiles of special concern (0 = Absent, 1 = Present) (see guidelines for list of species)
HARLEQ	N	1	0	Habitats supporting breeding harlequin ducks (0 = Absent, 1 = Present)
COLNEST	N	1	0	Colonial bird nesting sites (more than 5 pairs of cormorants, herons, or pelicans) (0 = Absent, 1 = Present)
OSPREY	N	1	0	Large nesting osprey population area (greater than 1 active nest per river mile) (0 = Absent, 1 = Present)
GDEAGLE	N	1	0	Habitats occupied by nesting golden eagles (0 = Absent, 1 = Present)
RAPTNEST	N	1	0	High density raptor nesting or winter concentration (0 = Absent, 1 = Present)
SHRBIRDS	N	1	0	Habitats supporting either mountain or piping plovers (0 = Absent, 1 = Present)
LAND_PTS	N	3	0	Points for special land designation (0 - 50)
QUAL_PTS	N	3	0	Points for riparian habitat quality (25 - 105)
TOT_HABPTS	N	3	0	Points from habitat quality (LAND_PTS + QUAL_PTS)
TE_PTS	N	3	0	Points for threatened and endangered species (0 - 95)
SSC_PTS	N	3	0	Points for species of special concern (0 - 81)
GAME_PTS	N	3	0	Points for game and furbearing species (16 - 118)
TOT_SPPTS	N	3	0	Points for species quality (TE_PTS + SSC_PTS + GAME_PTS)
HAB_VAL	N	3	0	Habitat value class (see guidelines for cutoffs)
SPEC_VAL	N	3	0	Species value class (see guidelines for cutoffs)
FINAL_VAL	N	3	0	Final wildlife resource value class 1 = Outstanding, 2 = Substantial, 3 = Moderate, 4 = Limited

APPENDIX B (cont.)

Wildlife Species Database Structure - WILDSPEC.DBF

Field Name	Type	Width	Dec	Field Description
J_CODE	C	3	0	Unique 3 digit wildlife unit code (see wildlife map); also in WILDLIFE.DBF
SPECIES	C	20	0	Threatened and Endangered Species present in the wildlife unit (see below for species list)
TE_VAL	N	1	0	Unit importance to recovery of threatened and endangered species 0 = species absent, 1 = species present but not habitat essential for recovery, 2 = habitat essential for recovery (see wildlife guidelines pg 6, for bald eagle and grizzly bear exceptions)
GAME_VAL	N	1	0	Habitat suitability of unit to game species 1 = season value or supports low populations, 2 = moderate importance to species or supports moderate populations, 3 = supports large populations and/or contains highly critical habitat
SEASON_VAL	N	1	0	Value of unit to species on seasonal basis 1 = Year-round, 2 = Spring, 3 = Summer, 4 = Fall, 5 = Winter, 6 = Spring & Summer, 7 = Spring & Fall, 8 = Spring & Winter, 9 = Summer & Fall, 10 = Summer & Winter
SUIT_VAL	N	1	0	Habitat suitability of unit to game species 1 = season value or supports low populations, 2 = moderate importance to species or supports moderate populations, 3 = support large populations and/or contains highly critical habitat

Wildlife Species List

Antelope	Grizzly Bear	Pheasant
Bald Eagle	Lynx	River Otter
Beaver	Marten	Sage Grouse
Bighorn Sheep	Moose	Sharptail Grouse
Black Bear	Mountain Goat	Whitetail Deer
Bobcat	Mountain Grouse	Whooping Crane
Canada Goose	Mountain Lion	Wild Turkey
Elk	Mule Deer	Wolf
Ferret	Peregrine Falcon	Wolverine

APPENDIX B (cont.)

Recreation Database Structure - RECREATE.DBF

Field Name	Type	Width	Dec	Field Description
WATERCODE	C	6	0	DFWP watercode
SECTION	C	4	0	Rated reach segment number (because of the possibility of multiple sections for a watercode there may be more than on RECREATE.DBF record for a RIVERS.DBF record)
AGENCY	C	1	0	Agency rating the reach 1 = DFWP only, 2 = BLM only, 3 = USFS only, 4 = DFWP & USFS, 5 = DFWP & BLM, 6 = BLM & USFS, 7 = DFWP, USFS, & BLM
UPPER	C	15	0	Verbal description of the reach upper boundary
LOWER	C	15	0	Verbal description of the reach lower boundary
LENGTH	C	2	0	Reach length in kilometers
REGION	C	1	0	DFWP administrative region
USFS_FOR	C	2	0	USFS Forest Code (see Appendix C)
USFS_DIST	C	2	0	USFS Forest District (see Appendix C)
WATER_CHAR	C	1	0	Water character (1 - 8) 1 = flat, 2 = flat/minor rapids, 3 = minor rapids, 4 = minor/moderate rapids, 5 = moderate rapids, 6 = moderate/major rapids, 7 = major rapids, 8 = not boated
MNTH_BTBL	C	1	0	No. of months per year boatable (1-9, 9 = 9 or more months)
MOTOR_BOAT	C	1	0	Use for motor boating (1 = primary activity, 2 = secondary activity)
CANOE	C	1	0	Use for canoeing (1 = primary activity, 2 = secondary activity)
KAYAK	C	1	0	Use for kayaking (1 = primary activity, 2 = secondary activity)
RAFT	C	1	0	Use for rafting (1 = primary activity, 2 = secondary activity)
TUBING	C	1	0	Use for tubing (1 = primary activity, 2 = secondary activity)
SWIMMING	C	1	0	Use for swimming (1 = primary activity, 2 = secondary activity)
BOAT_FISH	C	1	0	Use for boat fishing (1 = primary activity, 2 = secondary activity)
SHORE_FISH	C	1	0	Use for shore fishing (1 = primary activity, 2 = secondary activity)
EXTRA_1	C	2	0	Other land and water based activities (see below)
EXTRA_2	C	2	0	Other land and water based activities (see below)
EXTRA_3	C	2	0	Other land and water based activities (see below)
EXTRA_4	C	2	0	Other land and water based activities (see below)
TENT_CAMP	C	1	0	Use for tent camping (1 = primary activity, 2 = secondary activity)

APPENDIX B (cont.)

CAR_CAMP	C	1	0	Use for car camping (1 = primary activity, 2 = secondary activity)
TRAIL_USE	C	1	0	Use by pull trailer camping (1 = primary activity, 2 = secondary activity)
MOTOR_TRAI	C	1	0	Use by motorized campers (1 = primary activity, 2 = secondary activity)
DRIVING	C	1	0	Use for driving (1 = primary activity, 2 = secondary activity)
VIEWING	C	1	0	Use for viewing (1 = primary activity, 2 = secondary activity)
PICNIC	C	1	0	Use for picnicing (1 = primary activity, 2 = secondary activity)
USE_ESTIMA	C	1	0	Use estimate (1 = heavy to 5 = low)
ACCESS	C	1	0	Access rating (1 - 8) 1 = abundant, 2 = abundant/moderate, 3 = moderate, 4 = moderate/limited, 5 = limited, 6 = limited/restricted, 7 = restricted, 8 = other
ROS_CLASS	C	1	0	Recreation opportunity spectrum class (1 - 8) 1 = primitive, 2 = primitive/semi-primitive, 3 = semi-primitive, 4 = semi-primitive/transitional, 5 = transitional, 6 = transitional/rural, 6 = rural, 7 = rural/urban, 8 = urban
SCENIC_QUA	C	1	0	Scenic quality (1 - 7) 1 = outstanding, 2 = outstanding/substantial, 3 = substantial, 4 =substantial/moderate, 5 = moderate, 6 = moderate/limited, 7 = limited
NO_SITES	C	1	0	Number of developed recreation sites along this reach
DFWP_VAL	C	1	0	DFWP value class (1 - 5) 1 = outstanding, 2 = substantial, 3 = moderate, 4 = limited, 5 = unknown
BLM_VAL	C	1	0	BLM value class (1 - 5)
USFS_VAL	C	1	0	USFS value class (1 - 5)
FINAL_VAL	C	1	0	Final value class (highest agency rating)

APPENDIX B (cont.)

Codes for Other Land and Water Based Activities
(1 = Primary Use, 2 = Secondary Use)

Code	Activity	Use
01	Waterfowl hunting	1
02	Big game hunting	1
03	Upland bird hunting	1
04	Upland bird hunting	2
05	Big game hunting	2
06	Waterfowl hunting	2
07	Hunting	1
08	Hunting	2
09	Summer homes	1
10	Woodcutting	1
11	Rock collecting	1
12	Rock collecting	2
13	Trapping	1
14	Woodcutting	2
15	Bird hunting	1
16	Bird hunting	2
17	Pleasure driving (gravel roads)	1
18	Trapping	2
19	Pleasure driving (gravel roads)	2
24	Cross-country skiing	1
25	Cross-country skiing	2
26	Horseback riding	2
27	Wildlife viewing	2
28	Birdwatching	2
29	Mountain climbing	1
30	Snowmobiling	1
31	Backpacking	1
32	Crayfishing	1
33	Outfitting	1
34	Bow hunting	1
35	Horseback riding	1
36	Ice fall climbing	2
37	Ghost town visiting	2
38	Gold panning	1
39	Ghost town	1
40	Float boating	1
41	Mountain biking	2
42	Four-wheel driving	2
43	Water play	2
44	Scenic viewing	1
45	Waterskiing	1
47	Waterskiing	2
48	Scenic viewing	2
49	Photography	2
50	Taking minnows	1

APPENDIX C

Codes

Forest and District Codes, Forest Service Region 1

Forest & Districts	Code
BEAVERHEAD	02
Dillon	01
Wise River	02
Wisdom	03
Sheridan	06
Madison	07
BITTERROOT	03
Stevensville	01
Darby	02
Sula	03
West Fork	04
CUSTER	08
Cheyenne	01
Beartooth	02
Sioux	03
Ashland	04
Ft. Howes	05
Grand River	06
Medora	07
McKenzie	08
DEER LODGE	09
Deer Lodge	01
Jefferson	02
Philipsburg	03
Butte	04
FLATHEAD	10
Swan Lake	01
Spotted Bear	04
Hungry Horse	06
Glacier View	07
Tally Lake	08

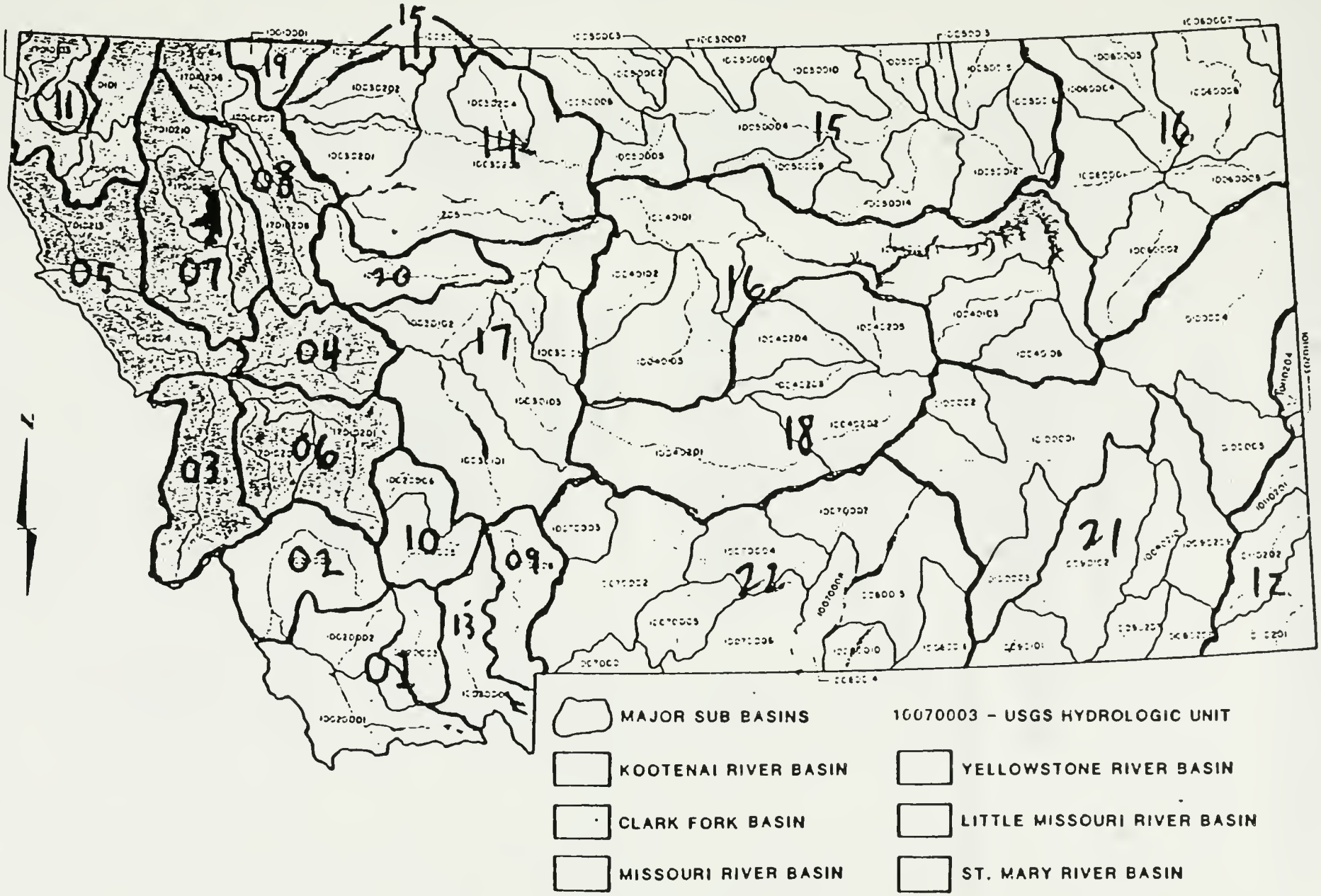
Forest & Districts	Code
GALLATIN	11
Big Timber	01
Livingston	02
Gardiner	03
Bozeman	05
Gallatin	06
Hebgen Lake	07
HELENA	12
Townsend	01
Helena	02
Lincoln	04
KOOTENAI	14
Rexford	01
Yaak	02
Fortine	03
Troy	04
Libby	05
Fisher River	06
Cabinet	07
LEWIS & CLARK	15
Teton	01
Sun River	02
Belt Creek	03
Judith	04
Musselshell	06
White Sulphur	07
LOLO	16
Missoula	03
Ninemile	04
Plains	05
Seeley Lake	06
Superior	07
Thompson Falls	08

APPENDIX C (cont.)

Bureau of Land Management District and Resource Area Codes

District	Code	Resource Area	Code
MILES CITY	020	Powder River	PRRA
		Big Dry	BDRA
LEWISTOWN	060	Billings	-BRA
		Havre	-HRA
		Valley	-VRA
		Judith	-JRA
		Phillips	-PRA
BUTTE	070	Dillon	-DRA
		Garnet	-GRA
		Headwaters	-HRA

APPENDIX C (continued)
DFWP DRAINAGE CODES



APPENDIX D

Files

The following files are on the system utilities installation diskette:

ZEDSYS.EXE	self-extracting system configuration utility
AUTOMENU.EXE	self-extracting menu programs and documentation
README.BAT	batch file to display UTILITY.DOC
UTILITY.DOC	introduction to the system utilities
SINSTALL.BAT	after copying the diskette(s), run this to install the system utilities

After installing the utilities the following files will be in your directory:

README.BAT	batch file to display UTILITY.DOC
UTILITY.DOC	introduction to the system utilities

From ZEDSYS.EXE:

EDSYS.EXE	the system configuration utility
EDSYS.HLP	part of on-line help for EDSYS
EDSYS.DBT	the rest of on-line help for EDSYS
EDUSKEYS.DBF	available EDIT and USER keys

FROM AUTOMENU.EXE:

AUTO.BAT	batch file that starts Automenu
AUTOMENU.COM	the menu program
AUTOCUST.COM	menu customization utility
AUTOMAKE.EXE	menu-building facility
PRINTDOC.BAT	batch file to print AUTOMENU.DOC
AUTOMENU.DOC	documentation for Automenu
READ.ME	special information for Automenu
LICENSE.DOC	Automenu license agreement
(C)1988.DOC	Automenu copyright notice
SW.COM	"SWap Monitor" utility program
SW.DOC	documentation for SW.COM

APPENDIX D (cont.)

The following files are on the MRIS Rivers Report Diskette(s):

RIVERSRP.EXE	self-extracting Rivers Report program and files
RIVERSIX.EXE	self-extracting Rivers database indexing program
DATA1.EXE	part of self-extracting Rivers database files
DATA2.EXE	remainder of self-extracting Rivers database files
LOOKUP.EXE	self-extracting Lookup Tables for MRIS
RIVERS.DOC	introduction to MRIS
README.BAT	batch file to display RIVERS.DOC
INSTALL.BAT	after copying the diskette(s), run this to install the Rivers Report
RIVERS.MDF	MRIS Menu Definition File for AUTOMENU
RIVERS.BAT	runs menu program for MRIS

After running install the following files will be in your directory:

RIVERS.DOC	introduction to MRIS
README.BAT	batch file to display RIVERS.DOC
RIVERS.MDF	MRIS Menu Definition File for AUTOMENU
RIVERS.BAT	runs menu program for MRIS

From RIVERSRP.EXE

RPRIVERS.EXE	the Rivers Report program
RPRIVERS.IN1	data files for introductory screens
RPRIVERS.IN2	
RPRIVERS.IN3	
RPRIVERS.IN4	
RPRIVERS.RPT	report definition file
RPRIVERS.20	report definition file for systems not using DOS 3.30 (the same as RPRIVERS.RPT)
RPRIVERS.A0	report definition file for computers with DOS 3.30 or greater
RPRIVERS.HLP	part of on-line help
RPRIVERS.DBT	the other part of on-line help

From RIVERSIX.EXE

IXRIVERS.EXE	index creation program
IXRIVERS.DEF	index creation definition file

From DATA1.EXE

FISH.DBF	the fisheries database
FISHSPEC.DBF	the fish species database
CULTURAL.DBF	the cultural features database
GEOLOGIC.DBF	the geologic features database
NATURAL.DBF	the natural features database

APPENDIX D (cont.)

From DATA2.EXE

RIVERS.DBF	the Rivers master database
RIVCNTY.DBF	the rivers counties database
RECREATE.DBF	the recreation database
WILDLIFE.DBF	the wildlife database
WILDUNIT.DBF	the wildlife unit database
WILDSPEC.DBF	the wildlife species database

From LOOKUP.EXE

ACCTUNIT.DBF	database of USGS accounting units
CATUNIT.DBF	database of USGS catalog units
BASIN.DBF	database of DFWP basins
COUNTY.DBF	database of counties
MISCCODE.DBF	miscellaneous codes

IXRIVERS creates several indices for the Rivers Report:

RV_CODE.NTX	DFWP water code index for RIVERS.DBF
RV_NAME.NTX	river name index for RIVERS.DBF
RV_BASIN.NTX	DFWP basin index for RIVERS.DBF
RV_JCODE.NTX	DFWP wildlife unit index for RIVERS.DBF
RC_FIPS.NTX	FIPS index for RIVCNTY.DBF
RC_CODE.NTX	DFWP water code index for RIVCNTY.DBF
FISHCODE.NTX	DFWP water code index for FISH.DBF
WILDLIFE.NTX	DFWP water code index for WILDLIFE.DBF
RECCODE.NTX	DFWP water code index for RECREATE.DBF
NATURAL.NTX	DFWP water code index for NATURAL.DBF
GEOCODE.NTX	DFWP water code index for GEOLOGIC.DBF
CULTCODE.NTX	DFWP water code index for CULTURAL.DBF
FISHSPEC.NTX	DFWP serial index for FISHSPEC.DBF
WILDUNIT.NTX	DFWP wildlife unit code for WILDUNIT.DBF
WILDSPEC.NTX	DFWP wildlife unit code for WILDSPEC.DBF

The first time the Rivers Report is run the following indices are created:

ACCTUNIT.NTX	USGS accounting unit index for ACCTUNIT.DBF
BASIN.NTX	DFWP basin name index for BASIN.DBF
CATUNIT.NTX	USGS cataloging unit index for CATUNIT.DBF
COUNTY.NTX	county name index for COUNTY.DBF
MISCCODE.NTX	category and abbreviation index for MISCCODE.NTX
RPRIVERS.NTX	topic index for RPRIVERS.HLP

APPENDIX E

Runtime Errors

Some errors can occur when you run the MRIS Rivers Report. Most of the time these errors are minor and can be easily corrected. Common errors and possible solutions are discussed below.

I. Out of Memory

The MRIS Rivers Report is a memory hog. 640K of memory is required and at least 512K of that memory must be available before running the program. If you get an out of memory error the only option is to provide more memory. Try unloading some or all of your TSR programs, (programs that are loaded and stay resident in memory, for example SIDEKICK or TORNADO) or modifying your AUTOEXEC.BAT file so they are not loaded automatically.

Note: There is public domain software called "CONFIG.EXE" which can be used to create more than one operating environment which can be easily loaded.

Note: The presence of TSR programs may also be the reason for slow performance. Again try unloading some or all of your TSR programs.

II. File Opening Errors

If any of the following messages appear at the bottom of the screen, one of two problems has occurred.

1) The file was not found, or;
2) There are too many files open.

PROC: OPEN_DATAB Line ???, open error xxxxxxxxxxxxxxxxxx Retry? (y/n)
PROC: RE_OPEN_IN Line ???, open error xxxxxxxxxxxxxxxxxx Retry? (y/n)

APPENDIX E (cont.)

If any of the following messages appear at the bottom of the screen, one of three problems has occurred.

1) The file was not found,
2) There are too many files open, or;
3) The index does not match the database.

Unable to create index xxxxxxx.NTX
Directory: xxxxxxxxxxxxxxxxxxxxx Press Enter.

Index file error for xxxxxxx.DBF : field name(s).
Directory: xxxxxxxxxxxxxxxxxxxxx Press Enter.

If the following message appears at the bottom of the screen a file was not found.

xxxxxxxx.DBF was not found.
Directory: xxxxxxxxxxxxxxxxxxxxx Press Enter.

SOLUTIONS:

If a file was not found the RPRIVERS.RPT file probably has an error. See Appendix F to check the RPRIVERS.RPT file.

If a there are too many files open there are several possible solutions.

1) You are using a version of MS-DOS prior to 3.3. Earlier versions allow a maximum of 20 simultaneous open files per process. MRIS uses more than 20 files.

   You can either upgrade to MS-DOS 3.3 or copy the file RPRIVERS.20 over RPRIVERS.RPT. This file causes MRIS to open no more than 20 files at a time. Because MRIS must open other files from time to time performance will decrease.

2) The FILES statement in your CONFIG.SYS is set too low or does not exist. We recommend that the FILES statement be set at FILES=31 or greater. An odd number is recommended.

3) Another program such as a TSR or Windows application and MRIS are using several files at the same time. You can increase the FILES statement in the CONFIG.SYS file.

APPENDIX E (cont.)

4) The statement SET CLIPPER=F35 is not in the environment. This software was written in Clipper, a compiler for the dBase language. In order to run the Rivers Report with more than 20 file open the SET statement must either be included in the AUTOEXEC.BAT file or in the, be included in a batch file that is used to run the Rivers Report, be included in the AUTOMENU MDF file, or be entered at the DOS prompt before running the Rivers Report.

5) The RPRIVERS.RPT file is in error. See Appendix F to check the RPRIVERS.RPT file.

If an index does not match a database the RPRIVERS.RPT file probably has an error. See Appendix F to check the RPRIVERS.RPT file. As delivered the index expression fields and filenames are all correct.

III. Any Other Error

Any other error will probably require technical assistance. Press the Print Screen key to print the screen on the printer and call or write:

Jim Senkler
Natural Resource Information System
Montana State Library
1515 E. Sixth
Helena, MT 59601

(406) 444-5354

APPENDIX F

Report Definition File

I Introduction

The MRIS Rivers Report uses a report definition file to tell it where to find the files it needs and how many files it can have open at one time. It also defines the indices used by the Rivers Report. The name of the file is RPRIVERS.RPT. **It must be in the same directory from which you loaded RPRIVERS.EXE, the Rivers Report program.**

Two versions of the report definition file are provided: RPRIVERS.AO and RPRIVERS.20. The RPRIVERS.RPT file provided on the installation diskettes is the same as RPRIVERS.20.

RPRIVERS.AO allows all of the files needed by the Rivers Report to be open at the same time. It allows for faster operation of the program. It requires DOS 3.30, the environmental statement SET CLIPPER=F35 to be set or included in the AUTOEXEC.BAT file, and the FILES statement in CONFIG.SYS be set to 35 or higher. (See your DOS manual under AUTOEXEC.BAT, ENVIRONMENT, CONFIG.SYS, and FILES for more information.)

RPRIVERS.20 allows a maximum of 20 files to be open at one time and will work with any DOS version 2.00 or greater. It requires no changes to your AUTOEXEC.BAT or CONFIG.SYS files.

If you have DOS 3.30 or greater, we recommend you alter your AUTOEXEC.BAT to include the SET CLIPPER=F35 line, alter your CONFIG.SYS file to have the FILES = 35 line, and copy RPRIVERS.AO to RPRIVERS.RPT for faster operation of the Rivers Report program.

APPENDIX F (cont.)

II RPRIVERS.RPT

Below is RPRIVERS.RPT as it exists on the installation diskette. If you accidentally erase it or change it so that the program will not run you can use a text editor to change it back, or you can copy RPRIVERS.AO or RPRIVERS.20 to RPRIVERS.RPT.

```
DC,11,15,4,11
DB,RIVERS,4,&APP_DTA_DIR
2I,RV_CODE,WATERCODE,N
I,RV_NAME,UPPER(NAME)+WATERCODE,N
I,RV_BASIN,"SUBSTR(WATERCODE,1,2)+UPPER(NAME)",N
I,RV_JCODE,UPPER(J_CODE)+UPPER(NAME),N

DB,RIVCNTY,2,&APP_DTA_DIR
I,RC_FIPS,"STR(FIPS,3)+WATERCODE",Y
I,RC_CODE,"WATERCODE+STR(FIPS,3)",Y

DB,FISH,1,&APP_DTA_DIR
I,FISHCODE,WATERCODE+SECTION,Y

DB,WILDLIFE,1,&APP_DTA_DIR,N
I,WILDJCDE,J_CODE,Y

DB,WILDCODE,1,&APP_DTA_DIR,N
I,WILDCODE,WATERCODE+J_CODE,Y

DB,RECREATE,1,&APP_DTA_DIR,N
I,RECCODE,WATERCODE+SECTION,Y

DB,NATURAL,1,&APP_DTA_DIR,N
I,NATURAL,WATERCODE+SITE,Y

DB,GEOLOGIC,1,&APP_DTA_DIR,N
I,GEOCODE,WATERCODE+SITE,Y

DB,CULTURAL,1,&APP_DTA_DIR,N
I,CULTCODE,WATERCODE+SITE,Y

DB,FISHSPEC,1,&APP_DTA_DIR,N
I,FISHSPEC,SERIAL,Y
```

APPENDIX F (cont.)

```
DB,WILDSPEC,1,&APP_DTA_DIR,N
I,WILDSPEC,J_CODE,UPPER(SPECIES),Y

LC,5,5,5,5
LT,ACCTUNIT,1,&APP_DTA_DIR
I,ACCTUNIT,UNIT_NO,Y
LT,BASIN,1,&APP_DTA_DIR
I,BASIN,UPPER(NAME),Y
LT,CATUNIT,1,&APP_DTA_DIR
I,CATUNIT,UNIT_NO,Y
LT,COUNTY,1,&APP_DTA_DIR
I,COUNTY,UPPER(STATE_ABBR)+UPPER(NAME),Y
LT,MISCCODE,1,&APP_DTA_DIR
I,MISCCODE,UPPER(CATEGORY) + UPPER(ABBR),Y

HC,1,1,1,1
HP,RPRIVERS.HLP,1,&APP_HLP_DIR,N
I,RPRIVERS,"TOPIC",Y
```

APPENDIX F (cont.)

III. Report Definition File Structure

All lines in the Report Definition File have a similar structure. They begin with a one or two character identifier delimited with a comma and one or more fields delimited with commas or quotation marks and commas.

For example; I,RV_BASIN,"SUBSTR(WATERCODE,1,2)+UPPER(NAME)",Y is an Index Definition Line with three fields. The second field is delimited with commas and quotation marks because it contains imbedded commas.

VARIABLE DEFINITION LINES - V

Lines beginning with V are Variable Definition Lines. The first field after the V is the name of the variable and must contain only alphabetic and numeric characters or the underbar (_). The second field is value to be assigned to the variable. (**Note**: the Report Definition File for the MRIS Rivers Report does not have any Variable Definition Lines.)

For example: V,DATA_DIR,C:\MRIS\DATA defines the variable APP_DTA_DIR to have the value "C:\MRIS\DATA"

The most common use of the Variable Definition Line is to define the directory where files can be found. See Variables as Directories.

FILE COUNT DEFINITION LINES - DC, LC, HC

Only one each of the DC, LC, and HC lines should occur in the Report Definition File.

The line beginning with DC must appear before any Database Definition Lines beginning with DB. The first field contains the maximum number of databases and the second field contains the maximum number of indices for the databases.

The line beginning with LC must appear before any Database Definition Lines beginning with LT. The first field contains the maximum number of lookup tables and the second field contains the maximum number of indices for the lookup tables.

The line beginning with HC must appear before any Database Definition Lines beginning with HP. The first field contains the maximum number of help files and the second field contains the maximum number of indices for the help files.

APPENDIX F (cont.)

The third and fourth fields for each of the Database Definition Lines contain the maximum number of databases and indices that will remain open after they have been initialized. The maximum number of databases must be greater than or equal to the number of corresponding databases whose fifth field is not "N". The maximum numbers of indices must be greater than or equal to the number of corresponding indices whose third field is not "N".

For computers with MS-DOS versions prior to 3.3 or that have some other limitation on the number of files open at one time these values can be adjusted to reflect a smaller number of files open at the same time. In addition, enough of the fifth field of the corresponding Database Definition Lines must be changed to "Y" and/or the third field of corresponding Index Definition Lines must be changed to "Y".

For computers with MS-DOS versions prior to 3.3 copy the RPRIVERS.20 file over the RPRIVERS.RPT file to insure proper operation. This Report Definition file has the appropriate Database Definition and Index Definition Lines. This will also result in slower performance.

DATABASE DEFINITION LINES - DB, LT, HP

Lines starting with DB define databases that are used by the report for data in the report. Lines starting with LT define lookup tables that contain data which opened to read data into lookup tables in the program and are then closed. Lines starting with HP define help files for on-line help.

The first field is the name of the database. The second field is the number of index files for that database. The fourth field is the name of the directory which contains the database. If it begins with a "&" it is a variable that contains the name of the directory which has the database. See Variables as Directories.

The fifth field is an optional field indicating whether or not the database is to be closed after it is initially opened. If it is "N" it will be closed. If it non-existent or "Y" it will be left open.

INDEX DEFINITION LINES - I

Lines beginning with I define an index for the preceding database. The first field after I is the name of the index. The second field is index expression. The third field is an optional field indicating whether or not the index is to be closed

APPENDIX F (cont.)

after it is initially opened. If it is "N" it will be closed. If it non-existent or "Y" it will be left open.

The directory for the index is taken from the preceding database definition line.

VARIABLES AS DIRECTORIES

When the directory field for a Database Definition Line starts with a "&" is treated as a variable. This variable must be defined in one of two ways.

1) If the variable is APP_DTA_DIR, APP_HLP_DIR, SYS_DTA_DIR, or SYS_HLP_DIR it is one of the four pre-defined directory variables stored in the SYSDIRS.MEM file. These variables are read into the program. To change the values for these variables use the EDSYS program (See Appendix G) or create Variable Definition Lines (Variable Definition Lines overwrite the values assigned in the SYSDIRS.MEM file).

2) Any other variable must be defined by adding a Variable Definition Line to the Report Definition File.

MODIFYING THE REPORT DEFINITION FILE

The Report Definition File should be modified only if absolutely necessary. It has been tested and should work as delivered. If you do need to modify it the following should be noted:

1) It is an ASCII (DOS) text file. If you use a word processor like Word Perfect you must read the file in as a text file and save it as a text file.

2) The File Count Definition Lines must occur before the corresponding Database Definition Lines. The values for databases and indices must be greater than or equal to the number of databases and indices in the corresponding Database and Index Definition Lines.

3) The second field (index count field) in a Database Definition Line must equal the number of indices for that database.

APPENDIX G

Customizing the Rivers Report

The MRIS Rivers Report can be customized using the system configuration utility, EDSYS. EDSYS allows you to modify several features of the MRIS Rivers Report including:

1) where system and application files are located,
2) which keys are used as the Exit key and Help key,
3) screen colors,
4) edit keys, and
5) user keys.

This program maintains the following five ".MEM" files which contain the current values for each of the features.

SYSDIRS.MEM - System Directories
SYSKEYS.MEM - System Keys
SY_MONO.MEM - System Colors for a monochrome monitor
SY_COLOR.MEM - System Colors for a color monitor
EDITKEYS.MEM - Edit Keys
USERKEYS.MEM - User Keys

APPENDIX G (cont.)

The program is loaded by choosing it from a menu or entering EDSYS from the DOS prompt. The program will display the following screen (Figure 1):

```
More than Computers
Edit System Definitions                                  08/23/1989

                Select the definition you wish to change

                              Select One

                    Modify System Directories
                    Modify System Keys
                    Modify Colors
                    Modify Editing Keys
                    Modify User Keys
                    -------------------------
                    End Program
```

Figure 1. Opening Screen

SYSTEM DIRECTORIES

To modify the system directories use the arrow keys to highlight the **Modify System Directories** option. When you press Enter a screen similar to the following screen will appear (Figure 2):

```
More than Computers
Edit System Definitions                                  08/23/1989

                        Enter directory paths for:

System data files        C:\CLIPSYS\
System help files        C:\CLIPSYS\
Temporary .MEM files
Application data files
Application help files
```

Figure 2. Enter Directory Paths

System Directory Paths are used to specify where data and help files are located. Five directories are defined:

APPENDIX G (cont.)

System data files - the directory where data files used by system utilities can be found.
System help files - the directory where help files used by system utilities (such as EDSYS.HLP, the help file for this program) can be found.

Temporary .MEM files - a directory where temporary files can be stored. If your computer has a RAM disk you can speed up the execution of some programs by entering the drive letter of the RAM disk here.

Application data files - the directory where the program's data files can be found.

Application help files - the directory where the program's help files can be found.

Enter the directory paths for the above files. If you need help press the F1 key. When you have entered all of the paths the following menu will appear on the screen (Figure 3).

```
Choose One

Return to Menu without saving directories
Save these directories and Return to Menu
Restore previous directories
```

Figure 3. Options after Entering Directory Paths

If you like your modifications save them by choosing the second menu item. If you do not, select either of the other two options. You will return to the opening screen (Figure 1).

APPENDIX G (cont.)

SYSTEM KEYS

To change the system key definitions use the arrow keys to highlight the **Modify System Keys** option. When you press Enter a screen similar to the following screen will appear (Figure 4).

```
More than Computers
Edit System Definitions                    09/26/1989

                    Enter system keys

Press system exit key    Escape

Press system help key    F1

                    Press 'H' for help
```

Figure 4. Enter System Keys

System Keys are the two keys which are used by many programs to exit the current level of the program and to ask for help. You can specify which keys will function as the Exit and Help keys. To do this first press the key you want to be the exit key. Typically it is the Escape key. Next press the key you want to be the help key. Typically it is the F1 key. If you want help press the **H** key.

When you have entered the keys the following menu will appear on the screen (Figure 5).

```
Choose One

Return to Menu without saving keys
Save these keys and return to Menu
Restore previous keys
```

Figure 5. Options after Entering System Keys

If you like your key definitions save them by choosing the second menu item. If you do not, choose either of the other two options. You will return to the opening screen (Figure 1).

APPENDIX G (cont.)

SCREEN COLORS

If you want to change the screen colors use the arrow keys to highlight the **Modify Colors** option. When you press Enter a screen similar to the following screen will appear (Figure 6).

```
More than Computers
Edit System Definitions                                   09/26/1989

                        Characters   Background
Normal Text             WHITE        BLACK
Current Edit Field      INVERSE      BLACK
Unselected Edit Field   UNDERLINE     BLACK
Border                        WHITE

Error                   INVERSE      BLACK          Error colors.
Help                    BLACK        WHITE          Help colors.
Query                   WHITE        BLACK          Query colors
Response                UNDERLINE    BLACK          Response colors.

Menu Border & Text      WHITE        BLACK          ---- Menu Colors ----
Available Menu Item     WHITE+       BLACK          Available menu item
Selected Menu Item      BLACK        WHITE          Selected menu item
Unavailable Menu Item   WHITE        BLACK          Unavailable menu item

:                                                                       :
:                                                                       :
                        Press F1 key for help
```

Figure 6. Enter Screen Colors

System Colors are used for various screen functions. You can enter colors for each item by typing the name into the appropriate field. If you enter an invalid color a pop-up table with the available colors will appear. Highlight the color you want and press enter. You can move from field to field with the up and down arrow keys.

Field Descriptions

Text being displayed, such as prompts and headings, use the Normal Text Foreground color on the Normal Text Background color. A field being entered uses the Current Edit Field Foreground and Background colors. Other fields available for editing use the Unselected Edit Field Foreground and Background colors.

The error Foreground and Background colors are used to display error messages.

Help messages are displayed using the Help Text Foreground color on the Help Text Background color.

APPENDIX G (cont.)

The Query and Response colors are the colors used by some requests for input. Parameters entered for reports use these colors. The question or prompt is displayed in the Query colors and the answer is displayed in the Response colors.

The border and heading of a menu use the Menu Border and Text Foreground colors. The menu choices that cannot be selected use the Unavailable Item colors. The menu choices that can be selected use the Available Menu Item colors. The current menu choice uses the Selected Menu Item colors.

The border color is the color of the area of the screen beyond the useable area of the monitor. For many computers & monitors it is ignored and the Normal Text Background color is used.

For color monitors the available colors are: BLACK, BLUE, GREEN, CYAN, RED, MAGENTA, BROWN, WHITE, GRAY, and YELLOW. Adding a '+' will brighten the color. It will not affect the Background color fields. Adding a '*' to a color will cause blinking.

For monochrome monitors the available colors are: BLACK, WHITE, BLANK, UNDERLINE, and INVERSE. Adding a '+' will intensify the color. It will not affect the Background colors. Adding a '*' to a color will cause blinking.

When you have entered the keys the following menu will appear on the screen (Figure 7).

```
Choose One

Return to Menu without saving colors
Save these colors and return to Menu
Restore previous colors
```

Figure 7. Options after Entering Screen Colors

If you like the screen colors save them by choosing the second menu item. If you do not, choose either of the other two options. You will return to the opening screen (Figure 1).

APPENDIX G (cont.)

EDITING KEYS

The Editing keys are not used in the MRIS Rivers Report. They will be used in data entry programs written to update the MRIS databases. The discussion below is provided for your information only.

If you want to change the Editing keys use the arrow keys to highlight the **Modify Editing Keys** option. When you press Enter a screen similar to the following screen will appear (Figure 8).

```
More than Computers
Edit System Definitions                                  09/26/1989

                    Enter full screen edit keys

Exit Program        Escape
Help Key            F1
Clear Fields        F2
Save Record         F3
Delete Record       F4
Find Record         F5
Next Record         F6
Previous Record     F7
Jump to Field       F9
New Window          F10

                         Press 'H' for help
```

Figure 8. Enter Editing Keys

System Edit Keys are the keys used by edit programs to do such things as clear the fields on the screen, find records, and save and delete records. The following keys are defined:

Description	Default Value
Edit Exit Key	Escape
Edit Help Key	F1
Edit Clear Fields Key	F2
Edit Save Record Key	F3
Edit Delete Record Key	F4
Edit Find Record Key	F5
Edit Next Record Key	F6
Edit Previous Record Key	F7
Edit Jump to Field Key	F8
Edit New Window Key	F9

APPENDIX G (cont.)

Edit Exit Key

The Edit Exit Key is used by most editing programs to end the program or to return to a previous level in the program. Typically it is the Escape Key.

Edit Help Key

The Edit Help key is used by most editing programs to ask for help. Typically it is the F1 key.

Edit Clear Fields Key

The Edit Clear Fields key is used by most editing programs to clear the fields on the screen and position the cursor in the first field. Usually the program is ready to add a new record to the database or to allow the user to find an existing record using the Find, Next, or Previous Record keys. Typically the Clear Fields key is the F2 key.

Edit Save Record Key

The Edit Save Record key is used by most editing programs to save a new record or the changes made to the current record. After saving the record most editing programs will clear the fields on the screen, display any default values, and position the cursor in the first field. The program is then ready to add an new record or search for an existing record using the Find, Next or Previous Record keys. Typically the Save Record key is the F3 key.

Edit Delete Record Key

The Edit Delete Record key is used by most editing programs to delete an existing record. If no record is available the key has no effect. After deleting the record most editing programs will clear the fields on the screen, and position the cursor in the first field. The program is ready to add a new record or search for an existing record using the Find, Next, or Previous Record keys. Typically the Delete Record key is the F4 key.

Edit Find Record Key

The Edit Find Record key is used by most editing programs to find an existing record. It uses the index associated with the field the cursor is positioned in. If field has no associated index the program will display an error message and take no action. The program will find the first record greater than or equal to the data entered into the field. If no record is found the fields are cleared and the cursor is positioned in the first field. The program is then ready to add a new record or search for another existing record using the Find, Next, or Previous Record keys.

After finding the record the program will display the record and position the cursor in the same field. Typically the Find Record key is the F5 key.

APPENDIX G (cont.)

Edit Next Record Key

The Edit Next Record key is used by most editing programs to find the next existing record. It uses the index associated with the field the cursor is positioned in. If field has no associated index the program will display an error message and take no action. The program will find the first record greater than the data entered into the field. If no record is found the fields are cleared and the cursor is positioned in the first field. The program is then ready to add a new record or search for another existing record using the Find, Next, or Previous Record keys.

After finding the record the program will display the record and position the cursor in the same field. Typically the Find Record key is the F6 key.

Edit Previous Record Key

The Edit Previous Record key is used by most editing programs to find the existing record less than the current record. It uses the index associated with the field the cursor is positioned in. If field has no associated index the program will display and error message and take no action. The program will find the first record less than the data entered into the field. If no record is found the last record in the index is found.

After finding the record the program will display the record and position the cursor in the same field. Typically the Previous Record key is the F7 key.

Edit Jump to Field Key

The Edit Jump to Field key is used in editing programs to allow the user to move directly to another field without having to go through the intervening fields. It uses the Jump field in the Edit Dictionary to determine which field to go to. If no jump field is defined no action is taken by the program. Typically the Jump to Field key is the F9 key.

Edit New Window Key

If an editing program has more fields than can be displayed on one screen or edits more than one database at a time the New Window key will allow the user to bring up another window with fields to be changed or added. If there are no other windows available the program will take no action when the key is pressed. Typically the New Window key is the F10 key.

APPENDIX G (cont.)

When you have entered the keys the following menu will appear on the screen (Figure 9).

```
Choose One

Return to Menu without saving keys
Save these keys and return to Menu
Restore previous keys
```

Figure 9. Options after Entering Editing Keys

If you like the editing keys save them by choosing the second menu item. If you do not, choose either of the other two options. You will return to the opening screen (Figure 1).

USER KEYS

The User keys are not used in the MRIS Rivers Report. They may be used in other programs written for MRIS. The discussion below is provided for your information only.

If you want to change the User keys use the arrow keys to highlight the **Modify User Keys** option. When you press Enter a screen similar to the following screen will appear (Figure 10).

```
More than Computers
Edit System Definitions                    09/26/1989

                    Enter user keys

User key No.  1    Ctrl-F1
User key No.  2    Ctrl-F2
User key No.  3    Ctrl-F3
User key No.  4    Ctrl-F4
User key No.  5    Ctrl-F5
User key No.  6    Ctrl-F6
User key No.  7    Ctrl-F7
User key No.  8    Ctrl-F8
User key No.  9    Ctrl-F9
User key No. 10    Ctrl-F10

                    Press 'H' for help
```

Figure 10. Enter User Keys

System User Keys are keys that can be used by a program to perform special functions. Unlike the System and Edit Keys their function can change from program

APPENDIX G (cont.)

to program. Most programs do not use the User Keys. Up to ten User keys can be defined. Press a key for each User key. They are typically the Control-F1 through the Control-F10 keys.

Description	Default Value
User Key 1	Ctrl-F1
User Key 2	Ctrl-F2
User Key 3	Ctrl-F3
User Key 4	Ctrl-F4
User Key 5	Ctrl-F5
User Key 6	Ctrl-F6
User Key 7	Ctrl-F7
User Key 8	Ctrl-F8
User Key 9	Ctrl-F9
User Key 10	Ctrl-F10

When you have entered the keys the following menu will appear on the screen (Figure 11).

```
Choose One

Return to Menu without saving keys
Save these keys and return to Menu
Restore previous keys
```

Figure 11. Options after Entering Editing Keys

If you like the user keys save them by choosing the second menu item. If you do not, choose either of the other two options. You will return to the opening screen (Figure 1).

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